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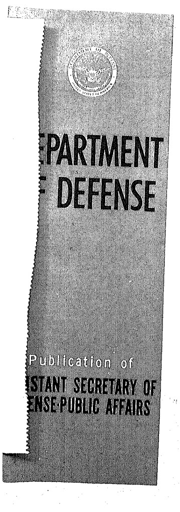

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TO THE MEMBERS OF THE DEFENSE INDUSTRY TEAM

The *Defense Industry Bulletin* is designed to assist American Industry in responding to Department of Defense requirements.

We have in being today all the weapons and equipment needed to keep us safe from armed aggression. We will have them tomorrow, and the day after tomorrow. That this is true is due in large part to the steadily increasing cooperation between the Department of Defense and Industry—both management and labor. But I am confident that we can work more closely together, and I am determined that we in the Department of Defense will do everything possible to achieve this end.

Publication of the *Defense Industry Bulletin* to communicate more effectively our policies and plans and define more precisely what we need to accomplish them is a step in that direction.

Robt S. McNamara

Secretary of Defense

DEFENSE INDUSTRY BULLETIN

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The *Defense Industry BULLETIN* is published monthly by the Business & Labor Division, Directorate for Community Relations, Office of the Assistant Secretary of Defense (Public Affairs). Use of funds for printing this publication was approved by the Director of the Bureau of the Budget.

The purpose of the *BULLETIN* is to serve as a means of communication between the Department of Defense (DOD) and its authorized agencies and defense contractors and other business interests. It will serve as a guide to industry concerning official policies, programs and projects, and will seek to stimulate thought by members of the defense-industry team in solving the problems that may arise in fulfilling the requirements of the DOD.

Material in the *BULLETIN* is selected to supply pertinent unclassified data of interest to the business community. Suggestions from industry representatives for topics to be covered in future issues should be forwarded to the Business & Labor Division.

The *BULLETIN* is distributed each month to the agencies of Department of Defense, Army, Navy, and Air Force, and to representatives of industry. Request for copies should be addressed to the Business & Labor Division, OASD/PA, Room 2E813, The Pentagon, Washington, D.C. 20301.

Contents of the magazine may be reprinted freely without requesting permission. Mention of the source will be appreciated.

Sec. Sylvester Sees Benefit To Industry In New Bulletin

Following consolidation in my office last July of the industry liaison functions of the Military Departments, a study was initiated to find the best packaging that can be devised to expedite public dissemination of defense information of interest to industry. By its overwhelming response to our study questionnaire, industry played an important part in helping develop a solution to the problem.

The result is this, the first issue of the *Defense Industry Bulletin*. The *Bulletin* is aimed at meeting your needs and we naturally look to you to help us guide its future course. Your comments will always be welcome.

I am confident that publication of the *Defense Industry Bulletin* will contribute significantly to a stronger, integrated defense-industry team.

Assistant Secretary of Defense
(Public Affairs)

BUSINESS-LABOR DIVISION—NEW OFFICE IN DOD PUBLIC AFFAIRS

As indicated in the masthead on this page, the *Defense Industry Bulletin* is published by the Business and Labor Division of the Directorate for Community Relations in the Office of the Assistant Secretary of Defense for Public Affairs (OASD PA).

The Community Relations Directorate consists of three functional divisions. In addition to the Business and Labor Division, they are the National Organizations Division and the Projects Division. The Business and Labor Division's primary area of responsibility is industry—both management and labor. The National Organizations Division, on the other hand, is responsible for assisting all national organizations less those that are industry and labor oriented.

In the words of Colonel Julian B. Cross, USAF, the Director for Community Relations, "The services of the whole Directorate, along with those of the entire OASD(PA), are available to business and labor, and all of us are anxious to be of assistance in every way possible. A call to the Business and Labor Division will bring the necessary assistance into play."

It is the mission of the Directorate for Community Relations to bring about the broadest possible public understanding and support of the objectives, accomplishments, programs, and activities of the Department of Defense.

Methods utilized to accomplish this objective include continuous liaison, cooperation, and coordination with interested elements of the American public on matters of mutual concern.

The names, locations and telephone numbers of officials, division and branch chiefs within OASD(PA) are listed on page 18.

The Market Place
(Cont. from Page 1)

An interesting aspect of defense industry is its ever changing structure. As major advances occur in military technology or as the defense posture is revised some programs decline while others ascend in importance. This changing face of the market place is reflected in Table 2, which compares the mix of major hard goods contracts during periods in World War II, Korea and FY 1961.

TABLE 2

Comparison of DOD Contract Awards in Three Eras.

Program	*WWII*	*Korea* (percentages)	*FY'61*
Aircraft	27.3	31.5	28.2
Missiles	0.0	0.5	33.6
Ships	26.2	6.8	7.8
Electronics	0.6	11.2	18.0
Tank-Automotive & Other	39.9	50.0	12.4
	100.0	100.0	100.0

Another aspect of defense industry—one with considerable economic ramifications—is the concentration of defense procurement dollars in a relatively small group of contractors. Some index of this concentration is given in Table 3, which analyzes the share of prime contract awards to the 100 companies which received the largest volume of defense contracts of $10,000 or more for the last five fiscal years.

TABLE 3

Analysis of 100 Companies Receiving Largest Dollar Volume of DOD Awards in FY 1959–1963.

(percent of total contract $'s)

Companies	*1959*	*1960*	*1961*	*1962*	*1963*
Top 5	25.0	24.8	24.8	22.5	23.2
Top 25	54.6	53.5	54.8	50.8	51.9
Top 100	73.8	73.4	74.2	72.3	73.9

A most important part of the defense industry is the small business community. Small business firms have two roles in the defense market place—that of prime contractor in its own right and that of supplier or subcontractor to other prime contractors.

As a prime contractor, small business is obtaining in FY 1964 about 17% of DOD contract dollars. As Table 4 shows, it does well in subsistence, textiles and clothing, construction and in buys of less than $10,000, but receives a relatively small share of the dollars spent on major hard goods.

The exact share of work subcontracted to small business is not known because of insufficient statistical data. But it is known that in the years from 1957 through 1963 it averaged $3,053 million per year. This indicates that the overall share of small business in the defense market place, as represented by the sum of its prime and subcontract dollars, is approximately one third of the total.

From the foregoing we can draw four important conclusions about the defense market place:

(1) It is our main source for research, development and production of military hardware;

TABLE 4

DOD Prime Contract Awards to Small Business in FY 1964 (in millions).

Program	*Small Business Total*	*Percent of Prime Awards*
Major Hard Goods		
Aircraft	$ 165	3.2%
Missile System	89	1.6
Ships	162	10.3
Tank-Automotive	78	19.8
Weapons	68	27.8
Ammunition	100	15.2
Electronics	302	10.8
Subtotal	974	[illegible]
Services	412	22.9
All Other		
Subsistence	307	53.0
Textiles, Clothing	176	65.8
Fuels and Lubes	180	22.9
Misc. Hard Goods	307	29.8
Construction	767	36.4
Less than $10,000	1,395	81.5
Subtotal	3,132	46.4

(2) Because of its size and ever changing structure, its impact on the economy is significant; (3) The lion's share of the defense

(Cont. on Page 3)

New Defense Security Office To Open In March

A Defense Industrial Security Clearance Office will open in March 1965 within the facilities of the Defense Construction Supply Center in Columbus, Ohio. The new office will provide for consolidation of industrial personnel clearance functions now performed at more than 100 locations throughout the country. It will operate under the direction of the Defense Supply Agency.

The new office will assume responsibility for security clearances of defense contractor employees who require access to classified information in connection with classified defense contracts. Clearances are now processed by the three Military Services. This consolidation in no way effects the responsibility for final adjudicative actions resulting in denial or revocation of clearances which remains with the Office of the Assistant Secretary of Defense (Manpower).

Establishment of this new office is part of the Department of Defense plan to consolidate under central management some 200 Military Department organizations which are engaged in contract administration services.

New Procurement Forms Tested By DOD

The Department of Defense (DOD) recently initiated a six-month test of new and simplified procurement forms at a number of Defense activities and installations. During the test, which began on November 2, 1964, four new forms are being used interchangeably for negotiated and advertised procurements in excess of $2,500 in lieu of 20 existing forms. The test is being supervised by the DOD Services Procurement Regulation (ASPR) Committee.

If the new forms prove successful in the test, they are expected to be used throughout the DOD, with substantial savings to both the Department and Industry. Other Federal Government procurement agencies have expressed interest in the test and, if the simplified forms prove successful in the DOD, they may be adopted Government-wide.

The forms to be tested are:

- DD Form 1489 (Request for Quotation)
- DD Form 1490 (Solicitation and Offer)
- DD Form 1491 (Award/Contract)
- DD Form 1492 (Modification of Solicitation or Contract)

The activities and installations that are participating in this test of procurement forms are:

LOCATIONS

Department of the Army

Army Electronics Materiel Agency, Philadelphia, Pa.

Army Aviation and Surface Command, St. Louis, Mo.

Army Engineer District, Baltimore, Md.

Department of the Navy

Navy Purchasing Office, Washington, D.C.

Area Public Works, Chesapeake, Washington, D.C.

Department of the Air Force

Barksdale AFB, Shreveport, La.

Columbus AFB, Columbus, Miss.

Westover AFB, Chicopee Falls, Mass.

Whiteman AFB, Knob Noster, Mo.

Dyess AFB, Abilene, Texas

Ellsworth AFB, Rapid City, S. Dakota

Vandenberg AFB, Lompoc, Calif.

Kelly AFB, San Antonio, Texas

Wright-Patterson AFB, Dayton, Ohio

Travis AFB, Fairfield, Calif.

McGuire AFB, Wrightstown, N. J.

Sheppard AFB, Wichita Falls, Texas

Amarillo AFB, Amarillo, Texas

Electronics System Division, L. G. Hanscom Field, Mass.

Kirkland AFB, Albuquerque, New Mexico

Air Proving Ground Center, Eglin AFB, Florida

Defense Supply Agency

Defense Industrial Supply Center, Philadelphia, Pa.

All other Department of Defense activities and installations will continue to use currently authorized ASPR procurement forms during the test period.

The Market Place

(Cont. from Page 2)

dollars is concentrated in relatively few contractors; and (4) Small business, although it obtains a lesser share of the defense dollars, is an essential part of it.

These four observations do not tell the whole story of the defense market place but they do throw some light on the why's and wherefore's of the procurement policies under which the Defense Department buys.

They underscore the need to keep a strong and healthy defense industry—one capable of outstripping the rest of the world technologically, of shifting its efforts to new fields as the needs of Defense require, and of providing defense materials at a price that we can afford. At the same time they draw attention to a very important prerequisite—that in order to keep the industry strong and healthy, DOD procurement policies must be concerned with maintaining conditions that promote our free enterprise system.

Our procurement policies aim to reverse the trend towards excessive concentration of dollars with large contractors, to increase the small business share and, in short, to provide for a strong, broad-based defense industry. To foster a healthy and dynamic industry our policies emphasize a highly competitive, multi-seller market place of real risks, where the rewards for efficiency and the penalties for inefficiency are clear-cut and certain.

DIPEC Expedites Contract Completion

Certain Air Force satellite programs now in the planning stages may reach completion more than a year ahead of schedule, and at less cost, due to re-use of idle assets of the Defense Industrial Plant Equipment Center (DIPEC), a field activity of the Defense Supply Agency.

The Center has supplied an Air Force contractor with equipment which, according to estimates, will result in completion of the contract as much as 17 months in advance of the previous schedule.

From its centralized inventory of idle defense-owned industrial plant equipment, DIPEC has provided an interferometer—an instrument that uses light interference phenomena for measurement of wave lengths—to a Rochester, N.Y., firm. This will be used in the manufacture of large diameter optical glass.

The interferometer supplied by DIPEC is one of only three ever manufactured in the United States. Acquisition cost of the item was $86,181, which means that the Air Force would have been required to bear this or greater expense if the item had not been available from DIPEC's idle inventory.

The Defense Industrial Plant Equipment Center, located at the Defense Depot in Memphis, Tenn., was established in March 1963. The Center manages defense-owned idle industrial plant equipment—equipment used in manufacturing — and maintains the weapons of America's defense arsenal. Specifically, DIPEC is responsible for:

- Screening Department of Defense requirements against idle industrial plant equipment to insure reutilization of available assets.
- Composition, maintenance and control of a balanced reserve.
- Providing centralized inven-

(*Cont. on Page 21*)

Deep Submergence

(*Cont. from Page 1*)

came quickly, and $3.5 million was re-programmed into FY 1965 to begin work immediately.

Deep Sub is primarily an ocean engineering project. It meets specific Navy operational requirements, but it may also provide an industrial base for work of all sorts in the deep ocean.

The project aims are these:

1. Search vehicles—four of them—that would probe as deep as 20,000 feet. These would locate and recover objects of less than 10 tons. In addition to the four operational vehicles, there will be a shallow-depth test vehicle and one prototype capable of 6,000 foot operation. Some $93 million is programmed for this area, which includes considerable supporting research and development.

2. Rescue vehicle to lift men from disabled submarines. These small vehicles would carry a dozen men to safety on a mother submarine or on a surface ship. Six are to be built. All would be air transportable. About $42 million is planned for this phase.

3. A salvage system, probably using collapsible pontoons, to lift submarines with a dead weight of up to 1,000 tons from continental shelf depths (600-800 feet). About $21 million is to be spent here, with another $11.5 million for studies into the feasibility of making the system lift submarines from the deeper ocean.

4. Free divers doing useful work for extended periods on the continental shelf. Divers would actually live in a "sea hut" for up to 90 days and work six hours a day in the ocean outside the hut. They are now restricted to 30 minutes work at a maximum of 380 feet. Ten million dollars would be spent here, with another $4 million in studies for putting divers even deeper. This man-in-the-sea portion of the project will also develop better methods of individual escape from disabled submarines.

Current planning calls for funding some $30 million in FY 1965, $55 million in 1967, $40 million in 1968, $35 million in 1969, and $25 million in 1970.

Requests for proposals for various sub-systems are scheduled for issue to industry by spring and early summer 1965. Special Projects will act as its own systems contractor, as in the Polaris project.

The Navy briefed representatives of some 200 companies with established interests in Deep Sub areas in Washington, D. C., last November.

In remarks to that group, Rear Admiral I. J. Galantin, the Director of the Special Projects Office, recalled the partnership with industry which was adopted for the Polaris program eight years ago. He predicted a similar close harmony between Industry and the Navy in the new project.

Transcripts of the all-day briefing, which included summaries of each phase of the Deep Sub project, are available from the National Security Industrial Association, 1030 Fifteenth Street, N. W., Washington, D. C.

Improvements In Contracting Explained By AF's Gen. Gerrity

Lieutenant General Thomas P. Gerrity, U.S. Air Force, Deputy Chief of Staff, Systems and Logistics, has strong ideas on how the changing procurement climate will affect Air Force objectives in the procurement of materiel.

General Gerrity recognizes that the Air Force-Industry team has made great strides in recent years in the development and acquisition of newer high performance weapon systems and support systems.

However, he warns that we cannot rest on our laurels, particularly when we look at the problems of today and tomorrow and the accompanying challenges not only to maintain an effective and ready force *now* —but to modernize that force so that it can be effective in the future.

In the following paragraphs General Gerrity explains the changing Air Force procurement policies:

"Our operating and support costs have been subject to the normal upward trends caused by increased costs of manpower, both in Government and in Industry. Further, development and production costs of newer high performance systems have reduced the variety of systems that we can develop and procure.

"Recognizing this, the Air Force has had a very aggressive program for a number of operating and support costs. Much has been done to reduce these costs by development of new management techniques, particularly in the field of maintenance and supply. As a result today we are maintaining combat and support systems worth 56% more than in 1958 at a cost in spare parts annual procurement substantially less than 50% of the 1958 rate.

"As to the annual budget for development and acquisition of equipment to modernize our force, we have made great strides in improving our efficiency in this task. However, further progress is possible if we take full advantage of the greatly increased competitive environment which exists in industry today. To do this, both the Air Force and Industry must take the pains and time in the pre-contracting phase to fully define what is wanted in terms of performance, reliability, delivery schedules and the terms and conditions (including incentive rewards and penalties) which will insure that we get what we want at prices quoted competitively. This should encourage substantially lower costs in acquiring higher performance systems.

"Certain subjects merit emphasis in our development and acquisition effort. The first is reliability. Unless we achieve a much higher plateau of reliability in our new weapon systems, we will suffer a degradation in mission reliability which we can ill afford. With the fewer systems we are able to procure today, the demand is for much higher operational in-commission performance reliability.

"We cannot afford systems which do not have high reliability designed into them. But neither can we afford high maintenance costs, high spares costs, high overhaul costs and high modification costs which impact our operating and support budgets. The complexity of our newer higher performance systems is not a liability if high reliability is achieved, but can impose an insurmountable problem if our standards are not met. Hence, we are stating reliability requirements in terms of specific standards.

"We intend to further expand the use of correction of deficiency clauses in our contracts. These clauses will provide a greater incentive to meet not only the letter but the intent of the current specifications with respect to performance and reliability.

"By increasing the use of multi-year procurement, we will see substantial rewards both to Industry and the Air Force. The Air Force will obtain greater standardization which will reduce operating, support, and training costs. We will also reduce costs through competition and continuity of production from year to year. From an industry point of view, there

(*Cont. on Page 6*)

Shillelagh System Under New Management

Management of the Army's Shillelagh weapon system has been transferred from the U. S. Army Weapons Command, Rock Island, Ill., to the Missile Command at Redstone Arsenal, Ala.

The recent move separates management of the missile system from the Sheridan/Shillelagh project to permit the potential application of the Shillelagh missile to other uses.

Coincidental with the move, Lieutenant Colonel R. M. Pearce was named project manager.

General Gerrity

(Cont. from Page 5)

will be greater interest in bidding on larger quantities. There also will be less tendency on the part of some companies to buy in on an initial one-year contract hoping for the rewards of subsequent sole source contracts. Further, there should be greater rewards to industry through ability to achieve more efficiency in longer term production runs.

"We are also experimenting with the approach of buying a complete development and production follow-on in one contract. This poses many difficult problems in defining clearly what we want and it may not be achievable on R&D programs involving substantial advancements. But here again our objective is to place the maximum amount of our procurement under the competitive process and to minimize a sole source follow-on.

"On the matter of standardization, many of our follow-on procurements of equipments already in our inventory are made annually on a competitive basis. Often the original designer is not the low bidder. As a result, we have items in our inventory meeting the same requisites of form, fit and function, but possessing no similarity in the detail parts which make up these products. Therefore, we must maintain many more spare parts items in our inventory than we would need if we were able to standardize.

"We have a program underway now to evaluate what we term the real costs of supporting such new items in the inventory. Real cost considers the additional logistic support which new items require, in addition to the bid costs for procuring these items. We will continue to emphasize real cost in our evaluation of procurements of similar items.

"We also intend to further the use of incentives in future contracts. Proper incentives in our contracts combined with adequate correction of deficiency clauses will provide increased confidence towards our getting the quality products we need.

"There is no question but that the procurement environment in which we live today is different than that of yesterday and the environment of tomorrow will undoubtedly differ from today's. We must change our methods as demanded by the challenge of the time and the environment. We will not only change our basic policies and procedures as sound analysis proves they should be changed but we are also willing to experiment where new ideas offer attractive gains but remain to be proven. We need the combined ideas of the many intelligent and experienced procurement people in the Air Force and Industry to bring new ideas into focus and to conduct such experimentation where warranted.

"In conclusion, the Air Force/Industry team has made substantial progress in the recent past in improving our efficiency and effectiveness in the development and acquisition processes. It will take that same team effort to find solutions for the challenges of today and tomorrow. The team that enabled the dramatic progress to the jet age, the supersonic age, the ballistic missile age and to the space age in a relatively few years certainly has the brain-power, the ingenuity, and the motivation to meet the challenges of the future."

TECHNICIANS AVAILABLE TO INDUSTRY

The Department of Defense has assured all career employees affected by base closures that they will receive other job opportunities. Hiring of new employees in the Defense Department has been restricted and displaced career employees are being given the opportunity to fill vacancies in the Department as such vacancies develop.

Many of the displaced employees, however, because of location preferences or other reasons, will be interested in employment in industry. Defense contractors and other industrial concerns seeking competent personnel are urged to recruit at the bases being closed. Arrangements to advise employees of positions for which companies are recruiting or for company recruiters to visit the defense installation being closed can be made directly with the Civilian Personnel Officer located at such bases.

Of particular interest to industrial organizations in need of experienced personnel are the large industrial-type organizations being discontinued such as shipyards (New York, N. Y. and Portsmouth, N. H.), arsenals (Watertown, Mass., Springfield, Mass., and the Elwood Unit of the Joliet Arsenal, Joliet, Ill.); Air Materiel Areas (Griffiss AFB, Rome, N. Y.; Brookley AFB, Mobile, Ala.; and Norton AFB, San Bernardino, Calif.) Companies are urged to include these installations, and other bases being discontinued, in their recruitment programs. (See excerpt from Asst. Secretary of Defense Paul's speech on page 13.)

ABOUT PEOPLE

DEPARTMENT OF DEFENSE

Paul R. Ignatius was sworn in as Asst. Secretary of Defense (Installations & Logistics) on Dec. 23, 1964. Prior to assuming his new position, Mr. Ignatius served as Asst. Secretary of the Army (Installations & Logistics), an appointment which he received in May 1961, and then became Under Secretary of the Army in February 1964. He succeeds Mr. Thomas D. Morris, who resigned to return to private industry.

The following personnel assignments were recently made in the Office of the Dir. of Defense Research & Engineering: Mr. Richard D. Geckler as Asst. Dir. of Research & Engineering (Strategic Weapons); Dr. S. Rains Wallace as Chief, Behavioral & Social Sciences; and Brig. Gen. Cuyler L. Clark, USA, as Military Assistant to the Dep. Dir. (Technical Warfare Programs).

New appointments made in the Advanced Research Projects Agency: Dr. Harold H. Hall as Chief Scientist, Office, Dir. for Remote Area Conflict (Project AGILE), a newly created position; Dr. Peter L. Auer as Dep. Dir., Office, Dir. for Ballistic Missile Defense (Project DEFENDER); and Dr. Lee W. Huff as Dir. of Behavioral Sciences (Project CARINA).

Maj. Gen. Rush B. Lincoln, Jr., USA, was designated Commander of the new Military Traffic Management & Terminal Service.

The Defense Atomic Support Agency (DASA) has announced the appointment of Dr. Theodore B. Taylor as Dep. Dir. (Scientific). In this position, Dr. Taylor will be top assistant to the DASA Director and will have prime responsibility in the field of nuclear weapon effects research and tests, including planning and management.

ARMY

Brig. Gen. Lawrence P. Jacobs has been appointed Dep. Chief of Communications-Electronics. Col. Donald R. Bodine, who had served as Dep. Chief of Communications-Electronics, is now Chief, Plans, Policies and Programs Office, in the Office, Chief of Communications-Electronics.

Col. Francis C. Fitzpatrick has assumed command of the U. S. Army Foreign Sciences & Technology Center, Washington, D.C. Col. Gilbert M. Payne, who previously served as commander, is deputy commander.

The following personnel assignments were recently made in the Office, Chief of Research & Development (OCRD): Brig. Gen. Kenneth H. Bayer as Dep. Dir. of Research & Development (Operations); Brig. Gen. Tobias R. Philbin, Jr., as Dep. Dir. of Research & Development (Plans); Col. George Sammet, Jr., as Dep. Dir. of Special Weapons; and Col. Paul Gray, Jr., as Chief, Air Defense Div.

Dr. Gordon Lake Bushey has been named Asst. Chief Scientist for the Army Materiel Command; Dr. Lawrence E. Killion has been designated Scientific Advisor and Director of the Test & Evaluation Department, U. S. Army Electronic Proving Ground, Ft. Huachuca, Ariz.

The new commander of the U. S. Army Tropic Test Center at Ft. Clayton, Canal Zone, Panama, is Col. Pedro R. FlorCruz.

Lt. Col. R. J. Astor now heads the Future Missile Systems Div., U. S. Army Missile Command at Redstone Arsenal, Ala.

NAVY

RAdm. Fred E. Bakutis has been reassigned from Commander, Antisubmarine Group 1, to Commander, Naval Support Force Antarctica. His replacement is Capt. Evan P. Aurand (RAdm. selectee), formerly of the Navy Program Planning Office, Office, Chief of Naval Operations.

RAdm. James R. Reedy, formerly Commander, Naval Support Force Antarctica, has been designated Commander, Carrier Div. 2.

RAdm. Samuel R. Brown has been reassigned to the Office, Chief of Naval Operations from his previous position as Commander, Carrier Div. 4. His replacement is RAdm. Allan F. Fleming, formerly Dep. Chief of Staff for Plans to the U. S. National Representative, Allied Forces, Mediterranean.

The new Asst. Chief of Staff, Logistics for the Commander in Chief, Allied Forces Southern Europe, is Capt. Phillip A. Beshany (RAdm selectee), formerly Commander, Submarine Squadron 16. He replaces RAdm. Donald W. Wuelzen, who has been reassigned as Commander, Amphibious Group 1.

RAdm. Harry N. Wallin has been named Dir., Office of Management Information, Department of the Navy. He was formerly Dep. Chief of Naval Material (Management & Organization).

The following assignments were recently made in the Bureau of Naval Weapons: Capt. H. N. Batten, Program Manager for Carriers, Amphibians, and Auxiliaries; Capt. V. P. O'Rourke, Fighter Design Officer; Capt. A. K. Earnest, Attack Design Officer; Capt N. D. Champlin, Project Manager for AIMS and Co-Director for Department of Defense AIMS Project Systems; Cdr. H. T. Cooper, Project Manager for A-4; Cdr. E. B. Boutwell, Asst. Dir., Strike Warfare, for Guided Missiles, and Project Manager for BULLPUP; Cdr. J. L. Coleman, Project Manager for COIN.

New assignments in activities of the Bureau of Supplies & Accounts: Capt. F. W. Corle, SC, Commanding Officer, Electronics Supply Office, Great Lakes, Ill.; Capt. O. W. Stafford, SC, Officer in Charge, Navy Purchasing Office, Washington, D. C.; Capt. W. W. Lenox, SC, Dir., Procurement Services Div., Office of Naval Research; and LCdr. D. E. Lovell, SC, Asst. Officer in Charge, Navy Purchasing Office, New York, N. Y.

AIR FORCE

The Air Force has announced 1965 retirement dates of a number of general officers based on lengths of service ranging from 30 to 35 years.

Gen. Mark E. Bradley, Jr., Commander, Air Force Logistics Command, and Gen. Walter C. Sweeney, Jr., Commander, Tactical Air Command, are both scheduled to retire July 31.

Another four-star general on the retirement list is Gen. John K. Gerhart, Commander-in-Chief, North American Air Defense Command, whose retirement date is March 31.

Maj. Gen. E. B. Cassady, Commander, Mobile Air Materiel Area, Brookley AFB, Ala., will retire Jan. 31.

Other general officers to retire are: Maj. Gen. Lee W. Fulton, Dir., Procurement & Production, AFLC, Wright-Patterson AFB, Ohio, April 30; Maj. Gen. Donald L. Hardy, Commander, Defense Industrial Supply Center, DSA, Philadelphia, Pa., May 31.

Maj. Gen. Arthur C. Agan, Jr. was assigned as Asst. Deputy Chief of Staff, Plans & Operations, HQ USAF, effective Dec. 1.

Other USAF general officer assignments have been announced as follows: Brig. Gen. Robert F. Worley as Asst. Deputy for Operations for Command & Control, Hq Tactical Air Command, Langley AFB, Va., effective Dec. 21; Brig. Gen. Charles G. Chandler, Jr. as Dir. of Maintenance Engineering, Office, DCS/Systems & Logistics, Hq USAF, effective Jan. 4; Brig. Gen. Harry L. Evans as Dep. Commander for Space for Manned Orbiting Laboratory, AFSC, effective Feb. 1; Brig. Gen. David M. Jones as Dep. Associate Administrator for Manned Space Flight, NASA, effective Dec. 14; Maj. Gen. Samuel C. Phillips as Dir. Apollo Program, NASA, effective Dec. 15.

The following USAF colonel assignments have been announced: Col. James W. Lillard, Jr. as Asst. Deputy for Weapons Effectiveness Testing, Air Proving Ground Center, AFSC, Eglin AFB, Fla.; Col. Thomas W. Morgan as Asst. Deputy Director for Program Management, Apollo Program Office, NASA; Col. Worth C. Clarke as Chief, Command & Control Div., Mobile Air Materiel Area, AFLC, Brookley AFB, Ala.; and Col. Leonard J. Otten, Jr. as Dir. of Special Weapons, San Antonio Air Materiel Area, AFLC, Kelly AFB, Tex.

Col. Fred L. Rennels, Jr. has assumed command of the Air Force's Western Contract Management Region effective Dec. 7, 1964. He succeeds Col. Robert W. LaPlante who will continue to serve as Vice Commander, WCMR.

USAEL ANNOUNCES REPORT ON FUEL CELLS

Fuel cell research reports from all known sources of activity have been collected by the U. S. Army Electronics Laboratories, Fort Monmouth, N. J., for incorporation in a forthcoming Fifth Status Report on Fuel Cells.

Initiated by the U. S. Army Research Office in 1959, the annual status reports on fuel cells have been prepared by the Electronics Laboratories for the past three years, following primary assignment for the Army fuel cells program to the Laboratories. The report includes industrial, university and nonprofit research organization as well as Government agency activities.

The Fifth Status Report on Fuel Cells will not contain any classified or proprietary information and, like the four previous volumes, will be made available to the public through sale by the U. S. Department of Commerce, Office of Technical Services, Washington, D. C.

MEETINGS AND SYMPOSIA

February 1965

National Air Navigation Meeting on FUTURE NAVIGATION ASPECTS OF LIMITED WAR (program is classified CONFIDENTIAL), Feb. 18–19, at State Department Auditorium, 23rd and C Streets, NW, Washington, D. C. Sponsor is The Institute of Navigation. For additional information, contact Mr. Ralph V. O'Brien, Institute of Navigation, 711 14th Street, NW, Washington, D. C. 20005.

March 1965

The U.S. Navy is co-sponsoring with the American Institute of Aeronautics and Astronautics a three-day conference on U.S. NAVY-MARINE SYSTEMS AND ANTI-SUBMARINE WARFARE, 8–10 March 1965, in San Diego, California. The Navy will present an Advanced Planning Briefing to Industry uring the morning of the first ay, 8 March. This briefing will e followed by technical sessions.

April 1965

International Conference on ROCRAMMING AND CON-ROL, mid-April, at U.S. Air orce Academy, Colo. Co-spon-ors: Air Force Office of Sci-ntific Research, The Frank J. eiler Research Laboratory and he University of California, erkeley, Calif. For informa-on contact: Maj. Orlando J. anci, Frank J. Seiler Research aboratory, USAF Academy, olo., telephone 474–3120.

International Conference on the MECHANICS AND PHYSICS OF SOLID PROPELLANTS, April 19–21 at Purdue University, Lafayette, Ind. Sponsor: Office of Naval Research. For information contact: Mr. J. M. Crowley, telephone OXford 6–5350, or Dr. H. Liebowitz, telephone OXford 6–2283, both at the Office of Naval Research, U.S. Department of the Navy, Washington, D.C.

Nineteenth Annual FREQUENCY CONTROL Symposium April 20–22, at the Shelburne Hotel, Atlantic City, N.J. Sponsor: U.S. Army Electronics Laboratories. For information contact: Mr. Millard F. Timm, Solid State and Frequency Control Division, U.S. Army Electronics Laboratories, Fort Monmouth, N.J. Telephone extension 51728.

Polytechnic Institute of Brooklyn International Symposium on SYSTEM THEORY, April 20–22 in New York, N.Y. Sponsors: The Microwave Research Institute of the Polytechnic Institute of Brooklyn, Air Force Office of Scientific Research, Office of Naval Research, the Army Research Office in cooperation with the Institute of Electrical and Electronics Engineers and the Society for Industrial and Applied Mathematics. For information contact: Symposium Committee, Polytechnic Institute of Brooklyn, 333 Jay Street, Brooklyn, N.Y. 11201.

May 1965

Symposium on NUMERICAL SOLUTION OF PARTIAL DIFFERENTIAL EQUATIONS, May 3–7, at the University of Maryland, College Park, Md. Sponsors: Air Force Office of Scientific Research, Office of Naval Research and the University of Maryland. For information contact: Maj. B. R. Agins (SRMA), Air Force Office of Scientific Research, Tempo–D, 4th Street and Independence Ave., S.W., Washington, D.C. 20333, telephone OXford 6–1302.

Conference on ULTRAPURIFICATION OF SOLID-STATE ELECTRONICS MATERIALS, May 8–10, at New York, N.Y. Sponsors: Air Force Cambridge Research Laboratories and the New York Academy of Sciences. For information contact: Drs. A. F. Armington or M. S. Brooks (CRW), Air Force Cambridge Research Laboratories, L. G. Hanscom Field, Bedford, Mass. 01731, telephone Area Code 617, CRestview 4–6100, ext. 4086.

The Third ORGANIC CRYSTAL Symposium, May 10–12, at University of Chicago, Center for Continuing Education, 1307 E. 60th St., Chicago, Ill. Sponsors: University of Chicago, Office of Naval Research and the Department of the Army. For information contact: Maj. Lawrence P. Jonahan, Jr., U.S. Army Research Office-Durham, Box CM, Duke Station, Durham, N.C., telephone 286–2285.

DOD REPORTS REDUCTION IN ASPR IMPLEMENTATION

Consolidation in the Armed Services Procurement Regulation (ASPR) of a number of existing procurement instructions was announced recently by the Defense Supply Agency. This action is designed to (1) eliminate much of the confusion being experienced by contractors in attempting to comply with various overlapping instructions; (2) assist in standardizing contract administration; (3) speed up the training and effectiveness of new government personnel; and (4) result in savings to both the contractor and the Government.

This progress is the result of a program initiated by the Department of Defense in October 1963 to consolidate into the ASPR the separate procurement instructions of the Military Departments and the Defense Supply Agency. In the future, departmental publications generally will be limited to internal management instructions.

Consolidation of separate departmental instructions into the ASPR on the following topics has been completed to date with the publication of revisions as indicated: *ASPR Revision 4, March 6, 1964:* (1) Letter Contract Clauses and (2) Clauses for Time and Material and Labor Hour Contracts; *ASPR Revision 6, July 1, 1964:* (1) Renegotiation Performance Reports and (2) Leader Company Procurement; *ASPR Revision 7, September 1, 1964:* (1) Post-Award Orientation of Contractors, (2) Warranties, (3) Patents-Authorization and Consent, Indemnification; and additional coverage in ASPR Section I, Part 15 on Options; *ASPR Revision 8, November 1, 1964:* (1) Terminations—Impact on Contractor Personnel and (2) additional coverage on Procurement of Research and Development; and *Defense Procurement Circular No. 9, June 18, 1964:* Responsibility of Contractors in Defense Procurement.

The consolidation of separate departmental instructions into the ASPR is a continuing project and the part that pertains to standard contract administration rules and procedures is directly related to the progress made in completing the consolidation of defense contract administration services under central management of the Defense Supply Agency.

The ASPR Committee has two panels to assist in this project. One panel is responsible for developing uniform contract administration policies and procedures and the other for developing additional ASPR coverage based on useful existing departmental instructions.

ADVANCE PLANNING BRIEFINGS AGENDA IS SET BY DOD-NSIA

The first five in a series of unclassified Advanced Planning Briefings for Industry will be conducted by the Department of Defense (DOD) in March and April of 1965 at the following locations:

Mar 3–4—Ambassador Hotel, Los Angeles
Mar 16–17—Americana Hotel, New York City
Mar 31–Apr 1—Conrad Hilton Hotel, Chicago
Apr 14–15—Marriott Motor Hotel, Dallas
Apr 28–29—Sheraton Park Hotel, Washington, D.C.

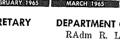
The objective of the briefings, which are sponsored by the National Security Industrial Association (NSIA), is to provide business and labor with a DOD-wide picture of long-range development needs, and to assist industry in planning for and seeking defense contracts.

"Within the limits of security," according to Deputy Secretary of Defense Cyrus R. Vance, "discussions will be as specific as possible in order to provide industry and the public with an understanding both of the defense advance planning process and our future plans which will affect industry's role in research, development, production and the provision of goods and services."

The Director of the Department of Defense Small Business and Economic Utilization Office and representatives of the Military Departments and Defense Supply Agency will be present at the briefings to provide counseling services on contract policies and procedures of their organizations. These representatives will be prepared to stay on an additional day following the briefings if there is sufficient interest on the part of the scientific and industrial community present to warrant.

Planning and invitations are being handled by the NSIA Washington headquarters, its city chapters and sponsoring industries.

As indicated in the master program on page 12, senior military and civilian officials of the Defense Department as well as leaders in industry and labor will participate in the briefings.



SPEAKERS CALENDAR

FICE OF THE SECRETARY DEFENSE

GEN. E. G. WHEELER, airman, Joint Chiefs of Staff, Printing Week Banquet, Phil- lphia, Pa., Jan. 22.

ION. JOHN T. McNAUGH-N, Asst. Secretary of Defense ternational Security Affairs), Brookings Institution, Washton, D.C., Jan. 28; at Canan Defense College, Washing-, D.C., Feb. 11.

ION. PAUL R. IGNATIUS, t. Secretary of Defense (Inllations & Logistics), at Intrial College of the Armed ces, Washington, D.C., Feb.

ION. EUGENE G. FUBINI, t. Secretary of Defense (Dep. of Defense Research & Eneering), to Pânel, Institute ctrical & Electronic Engis, Los Angeles, Calif., Feb.

ION. NORMAN S. PAUL, t. Secretary of Defense npower), at Armed Forces io & Television Luncheon, hington, D. C., Feb. 10.

ARTMENT OF THE ARMY

T. GEN. WILLIAM W. K, JR., Chief of Research & elopment, Office, Chief of f, U. S. Army, at 17th An- Naval Reserve Research inar, Washington, D.C., 5.

T. GEN. L. J. LINCOLN, Chief of Staff for Logistics, e, Chief of Staff, U. S. y, at Annual USMA Found-Day Celebration, Michigan t Point Society, Detroit, ., March 16.

DEPARTMENT OF THE NAVY

RAdm R. L. MOORE, JR., Chief, Office of Industrial Relations, Navy, at Industrial College of the Armed Forces, Washington, D. C., Feb. 3.

VAdm W. A. SCHOECH, Chief of Naval Material, at Industrial College of the Armed Forces, Washington, D. C., Feb. 9 and 16.

VAdm. G. R. DONAHO, Commander, Military Sea Transport Service, at Tulane University, New Orleans, La., March 15; at Air War College, Maxwell AFB, Ala., March 25.

DEPARTMENT OF THE AIR FORCE

HON. E. M. ZUCKERT and GEN. C. E. LeMAY at Air Force Association Dinner, Omaha, Neb., Jan. 25. (Appearance only.)

GEN. B. A. SCHRIEVER, Commander, Air Force Systems Command, at MacArthur Dedication, Norfolk, Va., Jan. 26; at Chamber of Commerce Meeting, El Segundo, Calif., Feb. 3; at American Institute of Aeronautics & Astronautics and Air Force Association Meeting, San Bernardino, Calif., Feb. 4; at Air Force Association Squadron Meeting, Milwaukee, Wis., Feb. 10.

BRIG. GEN. H. J. SANDS, JR., Commander, Ballistic Systems Div., AFSC, at American Society for Quality Control Meeting, Los Angeles, Calif., Jan. 26.

MAJ. GEN. R. H. CURTIN, Dir. of Civil Engineering, Hq. USAF, at Society of American Military Engineers Meeting, Cincinnati, Ohio, March 2.

MAJ. GEN. D. R. OSTRANDER, Commander, Office of Aerospace Research, USAF, at American Astronautics Society Meeting, Denver, Colo., Feb. 8.

MAJ. GEN. R. J. FRIEDMAN, Asst. Dep. Chief of Staff, Programs & Requirements, at Armed Forces Management Association Meeting, Washington, D. C., Feb. 9.

HON. E. M. ZUCKERT, Secretary of the Air Force, at Air Force Ball, New York, N. Y., Feb. 22. (Appearance only.)

GEN. J. P. MCCONNELL, Vice Chief of Staff, USAF, at American Ordnance Association Meeting, Los Angeles, Calif., Feb. 25.

HON. LEONARD MARKS, JR., Asst. Secretary of the Air Force (Financial Management), at Armed Forces Management Association Meeting, Dayton, Ohio, Feb. 25.

MAJ. GEN. O. J. RITLAND, Dep. Commander for Manned Space Flight, Air Force Systems Command, at American Institute of Aeronautics & Astronautics Meeting, Los Angeles, Calif., March 1.

PDP INDOCTRINATION FILM

DOD has a 33-minute film on Project Definition Phase with introduction by Dr. Harold Brown. It is available on loan from Asst. for Public Information, Naval Weapons Plant, Washington, D. C.

AGENDA DOD-NSIA ADVANCED PLANNING BRIEFINGS

FIRST DAY

Industry Keynote Address: What Industry Needs to Know

Speakers:
Thomas V. Jones, President, Northrop Corp., at Los Angeles, March 3.
William E. Zisch, President, Aerojet-General Corp., at New York, March 16.
R. S. Stevenson, President, Allis-Chalmers Mfg. Co., at Chicago, March 31.
P. E. Haggerty, President, Texas Instruments, Inc., at Dallas, April 14.
Thomas Moloy, Melpar, Inc., at Washington, April 28.

DOD Keynote Address: Major objectives of the DOD and the programs designed to implement them. The changing patterns in Defense spending and the resulting problems and opportunities.

Speakers:
Hon. Harold Brown, Dir., DDR&E, at New York, March 16; at Washington, April 28.
Hon. Paul R. Ignatius, Asst. Sec. of Defense (I&L), at Los Angeles, March 3; at Chicago, March 31.
Hon. Charles J. Hitch, Asst. Sec. of Defense (Comptroller), at Dallas, April 14.

Five Year Force Structure & Financial Program: Defense annual planning cycle; the decision process; the essential elements of industry planning.

Speakers:
Dr. Harold Asher, Dep. Asst. Sec. for Programming (Comptroller), at Los Angeles, March 3; at Dallas, April 14.
Dr. Alain C. Enthoven, Dep. Asst. Sec. for Systems Analysis (Comptroller), at New York, March 16; at Chicago, March 31; at Washington, April 28.

The Technological Challenge of the Next Ten Years: Future opportunities for industry in all areas of defense research and development.

Speakers:
Dr. Albert C. Hall, Dep. Dir. for Space (Defense Research & Engineering), at Los Angeles, March 3.
Lt. Gen. William J. Ely, USA, Dep. Dir. for Administration & Management (Defense Research & Engineering), at New York, March 16.
Dr. Chalmers W. Sherwin, Dep. Dir. for Research & Technology (Defense Research & Engineering), at Chicago, March 31.
Dr. Thomas P. Cheatham, Jr., Dep. Dir. for Tactical Warfare Programs (Defense Research & Engineering), at Dallas, April 14.
Mr. Fred A. Payne, Jr., Dep. Dir. for Strategic & Defensive Systems (Defense Research & Engineering), at Washington, April 28.

Luncheon

Speakers:
Dr. Ruben Mettler, President, Space Technology Labs, Inc., at Los Angeles, March 3.
Dr. Emanuel R. Piore, Vice Pres. for Research & Engineering, IBM Corp., at New York, March 16.
Mr. C. B. Kellstadt, Dir., Sears Roebuck & Co., and Chairman, Board of Trustees, Logistics Management Institute, at Chicago, March 31.
Mr. C. B. Thornton, Chairman of the Board, Litton Industries, Inc., at Dallas, April 14.

Management Trends in Defense Development & Production: Current and planned management programs to achieve more effective control of weapons acquisition and support, such as use of government facilities, program management, project definition phase, PERT, and configuration and change control; small business; DIAC activities, contractor performance evaluation, economic adjustment and contracting trends.

Speaker:
Mr. James W. Roach, Asst. Dir. Engineering Management (Defense Research & Engineering), at all five cities.

The Defense Cost Reduction Program: The success and effect of the cost reduction program and business, Industry and labor's role in the continuing defense cost reduction effort.

Speaker:
Mr. Paul B. Riley, Dep. Asst. Secretary for Supply & Services (I&L), at all five cities.

Defense Supply Agency—Procurement Trends and Future Industry Relationships: The functions of the Defense Supply Agency, its purchasing and contracting objectives and the markets it offers for business and industry.

Speaker:
VAdm Joseph M. Lyle (SC) USN, Dir., Defense Supply Agency, at all five cities.

Panel Discussion (DOD & Industry Moderators):

DOD *Participants:*
Hon. Paul R. Ignatius, Dr. Harold Asher, Dr. Albert C. Hall, and VAdm Joseph M. Lyle (SC) USN, at Los Angeles, March 3.
Hon. Harold Brown, Dr. Alain C. Enthoven, Mr. Paul H. Riley, and VAdm Joseph M. Lyle (SC) USN, at New York, March 16.
Hon. Paul R. Ignatius, Dr. Alain C. Enthoven, Dr. Chalmers W. Sherwin, and VAdm Joseph M. Lyle (SC) USN, at Chicago, March 31.
Hon. Charles J. Hitch, Mr. Paul Riley, Dr. Thomas P. Cheatham, Jr., and VAdm Joseph M. Lyle (SC) USN, at Dallas, April 14.
d Brown, Dr. Alain C. Enthoven, Mr. Paul H. Riley, and
seph M. Lyle (SC) USN, at Washington, April 28.

man & President, Menasco Mfg. Co., at Los

esident, Philco Corp., at New York, March 16,
President & Group Executive, Amphenol-Borg
larch 31.
t, Ling-Temco-Vought, Inc., at Dallas, April 14.
President, IBM Federal Systems Div., at Wash-

SECOND DAY

Army Advanced Planning Requirements: Army's materiel and research and development requirements in the areas of missiles, other weapons, electronics, transportation, ammunition, repair parts and maintenance; the opportunities of businesses, small, medium and large.

Speakers (at all five cities):
Hon. Daniel M. Luevano, Asst. Sec. of the Army (I&L)
Gen. Frank S. Besson, Jr., Commanding General, Army Materiel Command
Maj. Gen. John G. Zierdt, Commanding General, U. S. Army Missile Command
Maj. Gen. William W. Lapsley, Commanding General, U. S. Army Mobility Command
Maj. Gen. Frank W. Moorman, Commanding General, U. S. Army Electronics Command
Brig. Gen. Roland B. Anderson, Commanding General, U. S. Army Weapons Command

Navy Advanced Planning Requirements: A forecast of material requirements for ships and weaponry and opportunities of business to provide the hardware and research and development.

Speakers (at all five cities):
Hon. Kenneth E. BeLieu, Asst. Sec. of the Navy (I&L)
VAdm W. A. Schoech, USN, Chief of Naval Material
RAdm E. E. Christensen, USN, Asst. Chief of Bureau for Plans and Programs, Bureau of Naval Weapons
RAdm J. A. Brown, USN, Asst. Chief of Bureau for Design, Shipbuilding, and Fleet Maintenance, Bureau of Ships

Luncheon

Speakers:
C. J. Haggerty, President, Building & Construction Trades Dept., AFL-CIO, at Los Angeles, March 4.
Leonard Woodcock, Vice President, United Automobile, Aerospace & Agricultural Implement Workers of America, at New York, March 17.
Joseph A. Beirne, President, Communications Workers of America, AFL-CIO, at Chicago, April 1.
A. J. Hayes, President, International Association of Machinists & Aerospace Workers, AFL-CIO, at Dallas, April 15.
Wm. F. Schnitzler, Secretary-Treasurer, AFL-CIO, at Washington, April 29.

Air Force Advanced Planning Requirements: The present and future requirements of the Air Force, with specific emphasis on short and long range logistical requirements; research and developmental forecasts in the field of missiles, space vehicles, aircraft, ground equipment and avionics; the Air Force Systems and Logistics Commands, their procurement program and the opportunities for business and industry.

Speakers (at all five cities):
Hon. Robert H. Charles, Asst. Sec. of the Air Force (I&L)
Lt. Gen. W. A. Davis, USAF, Vice Commander, Air Force Systems Command
Maj. Gen. M. C. Demler, USAF, Commander, Research & Technology Div., Air Force Systems Command
Maj. Gen. G. F. Keeling, USAF, Dir. for Procurement, Air Force Systems Command
Maj. Gen. Lee W. Fulton, Dir. for Procurement & Production, Air Force Logistics Command

Panel Discussion (DOD and Industry Moderators):

DOD Participants: (at all five cities)
Hon. Kenneth E. BeLieu
Hon. Daniel M. Luevano
Hon. Robert H. Charles

Closing Remarks (Industry Moderators):

Speakers:
Charles F. Horne, President, General Dynamics/Pomona, at Los Angeles, March 4.
S. D. Hinckley, Vice President, Kaiser Industries Corp., at New York, March 17.
Joseph A. Chambers, Vice President & General Manager, Military Electronics Div., Motorola, Inc., at Chicago, April 1.
Marion L. Hicks, Vice President, General Dynamics/Fort Worth, at Dallas, April 15.
Harvey Gaylord, President, Bell Aerospace Corp., at Washington, April 29.

DOD STANDARDIZATION PROGRAM EXPECTS BIG ACHIEVEMENTS

Many outstanding achievements are expected in the coming months as a result of the new organization established in June 1964 by Secretary of Defense McNamara for the direction and modernization of the Department of Defense Standardization Program as well as for the whole area of technical data.

Called the Office of Technical Data & Standardization Policy the new organization, which is located in the Office of the Assistant Secretary of Defense (Installations & Logistics), is headed by Brigadier General A. T. Stanwix-Hay, formerly Deputy Chief Signal Officer of the Army and prominent in the development of Secretary of Defense Project 60. His deputy is Colonel O. C. Griffith, USAF, for

(*Cont. on Page 28*)

FROM THE SPEAKERS ROSTRUM

Excerpt from an address by Hon. Norman S. Paul, Asst. Secretary of Defense (Manpower), to the Society for Personnel Administration, Washington, D. C., Oct. 28, 1964.

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DOD Program for Employment Stability

In all of these changes (resulting from base closures), a broad, sustained effort is being made to plan ahead to ease the impact on individuals and provide them with continuing job opportunities. While the disruptive nature of these extensive adjustments is such that we have no delusions that hardships for some individuals have not resulted or that every employee is satisfied with the outcome of our placement efforts, we do believe the Department has reason to take pride in its overall accomplishments.

We have two basic objectives in mind in all of our efforts:

> First, we want to make the maximum possible use of such vacancies as do occur within the Department of Defense to offer positions to career employees whose positions are being eliminated. We want to be certain before bringing in a new employee for any position that we cannot use that position to continue in employment a qualified displaced defense career employee who desires to remain in the Federal service.
>
> Second, we want to use all of the facilities of the Department of Defense to reach our goal, not just those of one military department or defense agency. All the employees affected by these changes are, for this purpose, defense employees; not Army employees or Navy employees, or Air Force employees.

In evolving our plans and programs to achieve these objectives we have developed a comprehensive set of principles and procedures, which we call our program for employment stability.

Of these basic principles, perhaps the most important is that of advance planning and consideration of the personnel effects of changes in mission and organization. With advance planning and adequate lead time we are able to take the following important steps to find other positions for affected employees:

- —Hiring of permanent employees can be discontinued both at the affected activity and other DOD activities. As turnover occurs, the employees in the activity being phased out can be reassigned to continuing positions and if necessary their positions filled by temporary or term appointees.
- —Employees can be given adequate notice of what is happening to their jobs and of what alternatives are open to them. In major reductions, we require a 90-day notice, with a minimum of 60 days in a pay status.
- —Reductions can be phased so that masses of employees need not be separated at one time, thereby avoiding the peaks that make it so difficult to absorb them in other positions. Most of the 96 base closures, reductions, or consolidations announced December 12, 1963 and April 12, 1964 are being phased over one to three years for this reason.
- —Other defense activities, Federal agencies, and private industries can be encouraged to use the installation being phased out as a recruitment source. Since consolidations and closeouts are phased over a considerable period of time, many employees receive job offers through the cooperation of the personnel officers of other Federal agencies throughout the period of the phase-out.
- —Retraining programs can be established for employees who cannot be placed in their present skills but who can be placed, with a reasonable amount of retraining, in another job category. Although we have not as yet exploited retraining possibilities as fully as we would like, the Department has had some successful experiences. Mechanics, for example, have been retrained in a variety of skills, such as supply management, inventory control, and the maintenance of inertial guidance systems.

Making certain that vacancies are used to the maximum extent possible for the placement of affected employees presents a formidable administrative task in an organization as large as the Department of Defense. We are continually seeking ways to improve our techniques of matching jobs and people and, at present, are experimenting with the use of computers in that process.

In substance, our present procedure involves a series of sequential steps, each widening the area of placement consideration, although in some larger base closure actions all avenues of placement may be brought into play at once.

First, the activity being closed or substantially reduced is required to develop a phased placement plan, showing at what times what numbers of employees will be transferred to what locations, what numbers of jobs will have to be found for affected employees, and what retraining, if any, will be undertaken. As one of the first steps in this plan, full information concerning the reduction is given to employees, employee organizations and interested local groups, and plans are made for use of the placement services of State Employment Offices. In major base closures, a team of headquarters officials visits the affected base shortly after the announcement to meet with employees and management officials to discuss plans for finding other positions for the employees affected. These visits we have found do much to avoid the panic and fear of the future which understandably grips many employees when a base closure or reduction announcement is made. When employees realize that we do not intend to abandon them, that officials from the Secretary of Defense on down are concerned about their future, and that we do have working programs designed to find them another job opportunity, hope for the future is visibly restored.

Second, employees whose jobs are being transferred to new locations are identified and given the opportunity to transfer with their jobs. Those who do not wish to do so are not abandoned. We give these employees priority placement rights in the areas in which they are willing to accept employment. However, those employees who severely limit themselves as to location, as I am sure you are aware, continue the most difficult placement problem and often cannot be placed.

Third, the installation and the military department or defense agency concerned determines whether it will be able to accomplish any necessary reductions by attrition and by reassignment of employees within its own activities. This step may or may not involve a "freeze" on hiring at other activities, depending on the magnitude of the problem.

Fourth, all other defense activities in the commuting area are supplied with the names and other placement information on surplus career employees who may be separated because of reduction in force or failure to accompany a function. The names of these employees are entered upon the reemployment priority list of each such activity, immediately below the names of employees of that activity, and they are all extended reemployment priority rights.

Fifth, the installation may invoke our defense-wide Regional Placement program when it is determined that assistance outside the department affected is required. The essential features of this program are:

- —The country is divided into ten regions which coincide with the ten Civil Service Regions in the United States, and each military department and major defense agency has designated a coordinator for the region.
- —The losing activity, as a first step, advises other defense activities and coordinators in the region of the types and number of skills it expects to be releasing. Those activities then send weekly lists of vacancies to the losing activity and use that activity as a prime recruitment source.
- —The losing activity determines what types of jobs each affected employee is qualified to perform, and the locations and grades he is willing to accept within the region. Resumes or applications are then forwarded to installations where vacancies exist or there is a reasonable expectation of future vacancies.
- —Position vacancies at installations receiving applications referred under this procedure are "frozen" in the sense that appointments or transfers may not be made from outside an installation's parent department or agency, except from such referred applications. In severe circumstances, further restrictions on the filling of positions by internal movement of personnel can be and are imposed.
- —When positions are located for an employee at another DOD activity, if a move outside the commuting area is involved, special funds have been established to assure that the Department pays the expenses of transporting the employee, his family and household effects, to the new location.

These are the basic features of our present program.

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Excerpts from Address by Hon. Paul R. Ignatius, Under Secretary of the Army, before Association of U.S. Army Meeting, Nov. 18, 1964.

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Improvement in Definition of What we Want from Industry

Paralleling the formation of the Army Materiel Command was the establishment of CDC, the Combat Developments Command. It is the important responsibility of this command to look into the future and determine the Army's qualitative materiel requirements and the associated organization and doctrine for employment of new capabilities, equipment and weapons systems. The Army Materiel Command then translates these requirements into the necessary hardware, and the Continental Army Command trains units and individuals in the new doctrine for employment of the hardware so as to form an effective fighting force.

Our Army reorganization should be a long step toward improving the definition of what we need from industry. The Army—and industry—can now look to CDC for a statement of long range future requirements. . . .

In addition to improving our organization, we have also taken other steps to improve our definition of what we want from industry. One such step was the extended use of CDEC, the Combat Development Experiment Center located at Fort Ord, California. CDEC is an arm of CDC and is, in essence, an operations research laboratory where we can evaluate with real people and real equipment new tactics and the performance of new weapons. CDEC is more and more providing us with empirical data on matters of great importance, for example, the effect of armed helicopters against tanks, or the effectiveness of small arms against low flying aircraft. With data of this kind, we can define our requirements with greater confidence and inform you of our needs with a greater degree of certainty. We are also in a position to do a better job of evaluating unsolicited proposals from industry, or suggestions made by using elements in the Army. The importance of this is evident when one realizes that about half of our new items originate from these two sources. . . .

A major step in defining what we need is PDP, the Project Definition Phase, with which many of you are familiar. The purpose of PDP is to fully definitize technical characteristics, estimate costs with greater assurance, and determine cost-effectiveness relationships with greater precision before taking the expensive step of committing concepts to hardware. PDP helps us to know more accurately what we want to buy, and lets the contractor know more accurately what we expect of him. Accordingly, we are able to make better contracts, with clearly defined performance expectations and firmer pricing arrangements at the outset of the effort.

While we have made, I believe, much progress, there are nevertheless problems which remain. First, PDP helps us to refine what we believe we want, but we need to do a better job of defining our needs before the PDP phase. The fact that we receive so many ideas which we do not want is an indication that we are not determining our needs adequately or are not informing you adequately of what our true needs are. We also need to improve our own techniques for cost-effectiveness analysis so as to lay proper emphasis upon those programs that truly provide a quantum improvement. With respect to PDP itself, we must ensure that we conduct project definition in an effective manner so that unnecessary delays are avoided and the full opportunities of the techniques are realized. . . .

Quality Control and Reliability

. . . Reliable, trouble-free performance of its equipment has always been a matter of importance to the Army, but it is far more important today. First, the Army today has much more equipment per man than it used to have, and if we are to avoid tying up an inordinate number of troops in the maintenance function, we must have maintenance-free, rather than maintenance-prone equipment. Secondly, the Army today is expected to be able to respond rapidly to contingencies that may arise in the world. You can't respond rapidly if your equipment is down, and you can't fight successfully if you have to stop and make repairs. For both these reasons, then, quality control and reliability are of overriding importance to the Army.

. . . We must see to it that we in the Army and you in industry place proper emphasis on reliability and maintenance. These objectives are not so glamorous as the gun which shoots farther or the plane which flies faster. But it is entirely possible in a given instance that we would derive more combat benefit from an improvement in reliability or maintainability than from farther or faster performance. We will not achieve these improvements, however, unless we place the necessary emphasis on their need. . . .

We ask you, then, to join with us in finding ways to improve the quality, reliability, and maintainability of our equipment. You have found ways to do this is commercial practice and in many military applications and I have no doubt that we can continue to show progress.

* * *

MILITARY EXPORTS BRING BIG RETURNS

From November 1962 to November 1964 orders amounting to over $3 billion were received by the U. S. Government or U. S. Industry from over 35 nations around the world.

If your company has not participated at all, or fully, in this growth, the following information should be of extreme interest to you.

The DOD organization primarily concerned with Government/Industry efforts to promote military exports is the Office of International Logistics Negotiations (ILN), headed by Deputy Assistant Secretary of Defense for International Security Affairs Henry J. Kuss, Jr. This office is responsible for planning and negotiating logistics arrangements with foreign countries and international organizations in the development, coordination and execution of DOD plans and programs for maximizing military exports to friendly nations within overall U. S. national policy.

Mr. Kuss is also Chairman of the Committee on Military Exports of the Defense Industry Advisory Council, which is composed of key members of Industry and Government who provide a forum for the exchange of views on promoting, negotiating and supporting the export of U. S. military products. In this capacity, he advises the Secretary of Defense and his principal management assistants on ways and means of accomplishing our export objective through Government and Industry efforts.

As to organization, the ILN office is broken down into teams as shown on the accompanying list. Each professional specializes in certain countries and, as a "team" member, also works across the board in a functional capacity. For example, a company representative who seeks general information as to how his firm might fit into the military export operation would contact Mr. Peter Feigl, Director of Multi-Country Industry Cooperation (Gray Team); whereas inquiries for specific information regarding exports to Germany would be directed to Mr. H. J. Gownley, Director Multi-Country Procedures (White Team), or a member of the White Team.

OFFICE OF INTERNATIONAL LOGISTICS NEGOTIATIONS, OASD(ISA)

Mr. H. J. Kuss, Jr.	OX–59562	Deputy Assistant Secretary
Mr. J. D. Dunlap	OX–76221	Staff Director (ILN)
Mrs. A. Kieny	OX–77728	Special Assistant

NEGOTIATING ASSIGNMENTS

		Country Negotiations
MULTI-COUNTRY WEAPONS (RED TEAM)		
Mr. L. A. Alne, Director	OX–77080	Australia, Japan, Malaysia, New Zealand
Mr. R. W. Hodgson	OX–79323	Taiwan, Thailand, Burma, France, NATO
Mr. L. R. Felker	OX–79323	Canada, Sweden, Denmark, Norway
MULTI-COUNTRY PROCEDURES (WHITE TEAM)		
Mr. H. J. Gownley, Director	OX–56944	Germany
Mr. G. A. Chadwick, Jr.	OX–76271	Germany
Lt. Col. C. C. Crosswhite	OX–76271	Germany
Mr. L. Tosti, Jr.	OX–76271	Germany
MULTI-COUNTRY FINANCE (BLUE TEAM)		
Mr. F. J. Fede, Director	OX–77483	Italy
Mr. E. Reeves	OX–78397	Argentina, Brazil, Venezuela, Chile, Peru
Mr. L. A. Cain	OX–75278	Spain, Belgium, Netherlands, Commercial
Mrs. C. Clay	OX–75278	Ecuador, Mexico, Colombia, Unlisted
MULTI-COUNTRY INDUSTRY COOPERATION (GRAY TEAM)		
Mr. P. E. Feigl, Director	OX–77896	U. K., Switzerland, Austria, Iran
Mr. C. G. Stevens	OX–77887	Israel, Lebanon, Saudi Arabia, Iraq, Jordan
Mr. J. K. Hoenig	OX–77887	India, Turkey, Greece, Pakistan

Top 50 R&D Contractors FY 1964

1. North American Aviation, Inc.
2. General Dynamics Corp.
3. Lockheed Aircraft Corp.
4. Western Electric Co.
5. The Boeing Co.
6. Martin Marietta Corp.
7. General Electric Co.
8. Aerojet-General Corp.
9. United Aircraft Corp.
10. Pan American World Airways, Inc.
11. Avco Corp.
12. Hughes Aircraft Co.
13. Sylvania Electric Products, Inc.
14. Westinghouse Electric Corp.
15. Douglas Aircraft Co., Inc.
16. Philco Corp.
17. Ling-Temco-Vought, Inc.
18. Radio Corporation of America
19. Sperry Rand Corp.
20. General Motors Corp.
21. Thiokol Chemical Corp.
22. Raytheon Co.
23. Space Technology Laboratories, Inc.
24. International Electric Corp.
25. The Bendix Corp.
26. Hercules Powder Co.
27. ARO, Inc.
28. General Precision, Inc.
29. Atlantic Research Corp.
30. International Telephone & Telegraph Co.
31. Honeywell, Inc.
32. Vitro Corporation of America
33. International Business Machines Corp.
34. Grumman Aircraft Engineering Co.
35. Bell Aerospace Corp.
36. American Bosch Arma Corp.
37. Burroughs Corp.
38. Northrop Corp.
39. Texas Instruments, Inc.
40. Litton Systems, Inc.
41. Goodyear Aerospace Corp.
42. Fairchild Camera & Instrument Co.
43. Collins Radio Co.
44. Sanders Associates, Inc.
45. The Garrett Corp.
46. Melpar, Inc.
47. Thompson-Ramo Wooldridge, Inc.
48. McDonnell Aircraft Corp.
49. Curtiss-Wright Corp.
50. Ralph M. Parsons Co.

AC Meets To
ar Progress Reports

The ninth regular meeting of Defense Industry Advisory uncil (DIAC) will be held in shington, D. C. on January and 30, 1965, under the chair- nship of Deputy Secretary of fense Cyrus R. Vance.

The agenda for the meeting l be devoted primarily to a iew of the progress of Coun- subcommittees and working ups engaged in studying the owing subjects: "DOD Direc- on Source Selection;" "Con- tor Independent Technical ort (CITE);" "Role of the dit Function in Procure- t;" "Effect of Interest Cost Leasing Facilities and Re- d Matters;" "Utilization of tract Support Services;" egulations and Contract ses;" "Military Exports;" "Joint Industry/Defense ining."

dditionally, the Council will a discussion of actions to aken as a result of the indus- paper on "Cost Principles" g with reports on the "Field and Refinement of Compet- Planning and Progress Re- ing System;" on the status he "DOD Economic Impact ect;" and on the second e of the study on "Structure Dynamics of the Research Development Industry."

ne DIAC was established in Spring of 1962 to provide eans for direct contact be- n the Secretary of Defense his principal management tants and top level repre- tives of industry and to as a focal point for the w and discussion of prob- of mutual interest to indus- nd DOD.

nile there are only 22 regular industry members on the Council, dozens of knowledgeable people from industry management have served and continue to serve along with officials from the Department on Council subcommittees or working groups appointed to make assigned studies and otherwise provide advice and assistance in finding reasonable solutions to many vexing Industry-Government relationship problems.

The Deputy Secretary of Defense is the permanent Chairman of the Council. Paul R. Ignatius, Assistant Secretary of Defense (Installations and Logistics), is Alternate Chairman. Dr. Ruben F. Mettler of TRW Space Technology Laboratories is Industry Vice Chairman. Samuel W. Crosby, Assistant to the Deputy Secretary of Defense, is Executive Secretary.

DOD Consolidates Contract Audit Units

On December 12, 1964, Secretary of Defense Robert S. McNamara announced the consolidation of contract audit units of the military departments to which 3,600 personnel are now assigned. The new agency, to be known as the DOD Contract Audit Agency, will be under the staff supervision of the Assistant Secretary of Defense (Comptroller) and headed by a director of two star or comparable civilian rank.

This action is related to the consolidation of contract administration functions accomplished last year. The consolidation has been recommended by independent accounting consultants and the Defense Industry Council.

Secretary McNamara listed the following advantages of establishing the Contract Audit Agency: (1) Uniformity of management, policy direction and resource utilization; (2) More responsive objectives and consistent contract audit advice to procurement personnel; (3) Defense contractors and government agencies are provided a single point of contact for their procurement activities; (4) Elimination of the need to switch contract audit responsibility between military services when preponderance of contractors work shifts from one military department to another; (5) Enhancement of career training and development opportunities for contract auditors; and (6) A saving of $1.8 million a year through a reduction of 180 personnel required for this function. These manpower services will be achieved solely by normal attrition and not by reduction in force.

DEFENSE R&D EXPANDS WORK WITH ALLIES

During the past two years Department of Defense (DOD) has undertaken to expand the scope of cooperation in research and development (R&D) with friendly foreign countries. The policies, objectives and criteria are contained in DOD Directives No. 3100.3 and 3100.4, September 27, 1963.

The Office of the Assistant Director (International Programs) in the Office of the Director of Defense Research & Engineering, headed by Mr. Ronald M. Murray, and the R&D offices of the Military Departments are working together in the implementation of the above mentioned directives. Generally, the procedure being followed is:

1. An overall government-to-government bilateral agreement is signed at the Defense Secretary level outlining the terms and conditions of cooperative R&D.

(*Cont. on Page 18*)

R&D Work With Allies

(Cont. from Page 17)

2. A bilateral R&D Steering Committee, consisting of three officials from each government, is established to negotiate and resolve over-all policies and review long range planning. Unresolved matters and important decisions may be referred to the Defense Secretary/Minister for approval.

3. The Steering Committee delegates responsibility for conducting technical negotiations to a Senior National Representative of the respective military department or other appropriate agency. Frequently, whenever a specific project is under consideration, each government will also appoint a technical representative.

Thus far, overall R&D bilateral agreements have been signed with Federal Republic of Germany, United Kingdom and Italy. The following joint R&D project agreements have been initiated during the past year:

Federal Republic of Germany

(1) 1970 Main Battle Tank; (2) Heavy Equipment Transporter; (3) U. S. Assistance in Federal Republic of Germany development of a lightweight V/STOL fighter and associated avionics equipment; (4) Joint testing and evaluation of U. S. XC–142, X–19 transports and Federal Republic of Germany DO–31 transport and VJ–101C fighter aircraft; and (5) Miniature Inertial Navigation System for Ships.

France

Information exchange programs providing for the U. S. evaluation of the French Mirage III–V V/STOL Fighter and the French Brequet 941 STOL Transport in exchange for U. S. information on the TF–30 engine which France may require for the Mirage III–V.

United Kingdom

(1) Cooperation in the use of Beryllium in aircraft engines; (2) P–1127 V/STOL Aircraft.

Italy

Several Air Force projects are under consideration.

ROSTER OF OFFICE OF ASST. SECRETARY OF DEFENSE (PUBLIC AFFAIRS)

Honorable Arthur Sylvester	2E800	79312
Deputy Asst Secretary/Nils A. Lennartson	2E800	53381
Mil Asst/Capt. Hugh M. Robinson, USN	2E782	59032
Spec. Asst./Orville E. Splitt	2E780	76648
Spec. Asst. for South Viet Nam/Col. R. R. Bankson	2E789	72873
Exec. Asst./Major C. S. Weaver	2E800	79143
Administrative Control Officer/Russell Griffin	2E791	56993
Ch Media Accreditation & Tours/LtCol R. P. Taffe	2D757	76005
Directorate for Plans and Programs		
Dir/Col Chas F. Heasty, Jr.	2E776	71346
Dep Dir/John C. Kirby	2E776	71347
Army Member/Col John K. Eney	2E777	71311
Navy Member/Capt Robert H. Mereness	2E777	59542
AF Member/Col Bill Fendall	2E777	59558
Asst Air Force Member/Lt Col D. C. Mahoney	2E777	59558
DOD Member/Hunt Clement	2E777	54265
Directorate for Information Services		
Dir/William E. Odom	2E765	59082
Dep Dir (Audio-Visual)/Robert Harvey	2E765	74162
Dep Dir (News)/Captain Walter J. Ellis, USN	2E765	53886
Staff Assistant/Frank Falatko	2E765	53886
Defense News Branch/John H. Sullivan (Acting)	2E757	53201
Armed Services News Br/Lt Col C. G. Furbish	2E757	75131
Mag and Book Br/Lt Col C. V. Glines, Jr.	2D768	71740
Pub Inquiries Br/Peter A. Erickson	2D771	76462
Radio-TV News Br/Norman Hatch	2E765	75111
News Photo Br/Maj Francis N. Satterlee	2E757	75331
Motion Pic Prod Coop/Donald Baruch	2D775	74596
Directorate for Community Relations		
Dir/Col J. B. Cross	2E772	52113
Dep Dir/Eugene J. Sleevi	2E772	52113
Natl Organizations Div/Col R. A. Carr	2D769	53227
Vets Activities Br/Lt Col F. T. Huray	2D765	56391
Civic Activities Br/Lt Col Edw Ellis	2D765	53227
Womens Activities Br/Frances Nelson	2D774	54965
Business & Labor Div/Col E. C. Gibson	2E818	50208
Business Br/Lt Col Sheldon Hicks	2E813	52709
Labor Br/Wm Welsh	2E813	52036
Projects Div/Capt O. S. Burnette	2E773	74170
Sp Asst/Wm G. McNamara	2E773	75016
Events Br/Maj Ron Everett	2E773	56795
Bands & Troops/Lt Col Anne Sweeney	2E773	74985
Speakers Br/David A. Smith	2E773	73157
Program Br/Maj M. K. Chase	2E773	76368
Directorate for Security Review		
Dir/Charles W. Hinkle	1E771	74326
Dep Dir/Roger Delaney	1E771	74026
Asst Dir Policy & Procedure/Willis D. Lawrence	1E771	74768
Asst Dir Security/John E. Carland	1E771	74768
OSD Div/Col Thompson M. Colkitt	1E765	56428
Army Div/Col Kenneth B. Stark	1E764	73115
Navy Div/Capt J. A. Montgomery	1E764	72716
Air Force Div/Col Jonathan Leet	1E764	75458

BIBLIOGRAPHY

The following recently published directives and instructions of the Department of Defense (DOD) may be of interest to the Defense Industry:

DOD Instruction 5010.12, "Technical Data and Standardization Management," Dec. 28, 1964. This instruction implements the DOD Technical Information Program by bridging the interface between the Scientific and Technical Information Program and the Technical Logistics Data Information Program. It implements the Defense Standardization Program with respect to responsibility for this program and provides for management of technical data and standardization programs relating to development, procurement, supply, training, operations or maintenance activities. It delineates responsibilities and sets forth relationships among the participating offices of the Secretary of Defense on a functional basis.

The provisions of this instruction apply to the full technical and logistics cycles from exploratory development through production, distribution, use, maintenance, and disposal of military items.

Its provisions cover the coordination and prescribe relationships between the DOD Scientific and Technical Information Program, the DOD Technical Logistics Data and Information Program, and the DOD Standardization Program.

DOD Directive 5105.33, "Armed Forces Radiobiology Research Institute (AFRRI)." Nov. 20, 1964. Establishes mission, functions and manning of AFRRI.

DOD Directive 3005.2, "Non-Industrial Facilities for Mobilization," Dec. 7, 1964. Establishes a program (1) to assure that existing non-industrial facilities (hotels, motels, resort area facilities, educational institutions, hospital, office buildings, and other real estate that can be used for military purposes) not under control of the DOD will be available for military preparedness purposes in event of mobilization; and (2) to reduce DOD requirements for new construction to greatest extent practicable and to provide facilities in a minimum period of time in event of such military mobilization.

DOD Directive 4215.18, "Management of Defense-Owned Industrial Plant Equipment (IPE)," Dec. 10, 1964. Establishes policies and assigns responsibilities for the management of DOD-owned IPE inventories and prescribes procedures for reporting such inventories to Defense Industrial Plant Equipment Center, Defense Supply Agency.

DOD directives and instructions may be obtained from:
Publications Distribution Branch
Office of the Secretary of Defense
Room 3B940, The Pentagon,
Washington, D.C. 20301

Defense Procurement Circular No. 16, Nov. 17, 1964. June 1964 Edition of Certain Standard Contract Forms; and New Small Business Status Protest Procedure.

Defense Procurement Circular No. 17, Nov. 23, 1964. Interim Instructions Concerning Fringe Benefits Payments Under Construction Contracts; Changes in Defense Supply Agency Assignments of Responsibilities for Handling Contractor Plant Equipment Inventories; and Revision of Standards for Responsible Prospective Contractors (ASPR 1-903.2).

Defense Procurement Circular 18, Nov. 27, 1964. Extension of Mandatory Date for Certain Standard Forms.

Defense Procurement Circular No. 19, Nov. 30, 1964. Value Engineering (Expedited Implementation of DPC No. 11 and Revision of ASPR 1-1707.1 and 1-1708); Extension of Mandatory Date of Certain Standard Forms; Equal Employment Opportunity; and Certification of Independent Price Determination.

DOD circulars may be ordered from Superintendent of Documents, United States Government Printing Office, Washington, D. C. 20402.

DOD Consolidates Traffic Management Terminal Service

The Secretary of Defense recently announced the formation of a new Military Traffic Management and Terminal Service (MTMTS) to regulate surface transportation of military cargo and personnel within the continental United States, and to manage all military ocean terminals except those used by the Navy in support of the fleet.

The new organization consolidates the management and operation of military traffic, land transportation, and common-user ocean terminals under the Secretary of the Army as a single manager. It will be jointly staffed under an Executive Director who will report directly to the Secretary of the Army.

This consolidation does not include air terminal operations which will continue as an integral function of the Military Air Transport Service, nor will it effect that portion of the operation of the Navy's tidewater installations which involve fleet support. It will, however, involve ocean terminal activities which are used by more than one service and which can be provided at these tidewater installations.

Under the new organization,

(Cont. on Page 21)

NOTES FOR EDITORS

The "Notes for Editors" pages in this Bulletin will be a regular feature. Our purpose is to keep the editors of industry house organs advised of what we think are worthwhile projects, innovations and occurrences within the Department of Defense (DOD) which would make interesting articles. Items will appear in capsule form with their highlights and significance stressed.

The function of assisting the magazine and book media at the national level on Armed Forces and DOD matters was recently consolidated into a single unit under the Assistant Secretary of Defense for Public Affairs. The purpose of the consolidation was two-fold: to effect economy of operations and to give better service to publishers, editors and writers through a centralized operation.

In general, we are prepared to assist industry magazine editors with any project which concerns the DOD. The specific services provided to industry publication editors by the Magazine and Book Branch include the following:

—Answering specific queries for detailed information.

—Suggestions and advice on developing defense article ideas.

—Limited research assistance.

—Photographic materials for use as article illustrations.

—Arranging interviews with DOD personnel at seat of Government.

—Unclassified background briefings for writers and editors.

Due to research and printing lead time, picture requests normally take about two and one-half weeks to fill. However, pictures dealing with current defense news generally can be forwarded the day of your request.

In addition to the services listed above, a monthly *Magazine and Book Newsletter* is prepared and distributed to interested writers, editors and publishers. If you are not receiving our *Newsletter* and would like to be placed on the mailing list, please forward your request to:

Chief,
Magazine and Book Branch
OASD(PA)
Rm 2E765A, Pentagon
Washington D. C. 20301

RESEARCH IN COMPUTER FIELD

The major Air Force agency performing research in the computer field is a Rome Air Development Center (RADC), Griffiss AFB, N. Y. RADC is sponsoring approximately $1 million annually in computer research and development, which is the responsibility of the Data Processing Section of the Center, headed by Mr. Alan R. Barnum. RADC also coordinates computer research performed by other Air Force organizations: the Electronic Systems Division and Space Systems Division of the Air Force Systems Command and the Air Force Cambridge Research Laboratories of the Air Force Office of Aerospace Research.

Exercise Polar Strike Is Scheduled

Exercise POLAR STRIKE is scheduled for January and February 1965 in the interior of Alaska. The exercise will be held in the area east of Northway, Tetlin and Delta Junction in the Mount Fairplay and Mount Harper area. Actual field operations will be conducted from February 4–17.

Purpose of the exercise is to evaluate plans for reinforcement of the Alaskan Command by elements of the U. S. Strike Command and for continued operations in Alaska. In addition, it will assist in the evaluation and development of procedures for the command and control of joint forces and provide information on cold weather operations and testing equipment under Arctic conditions.

POLAR STRIKE will involve Headquarters, Alaskan Command and units of the Alaskan Air Command; U. S. Army, Alaska; U. S. Strike Command; and Army and Air Force elements of the Canadian Armed Forces.

WALLEYE IN PDP PHASE

On December 15, 1964, the Navy announced selection of the following three companies to proceed with the modified Project Definition Phase (PDP) WALLEYE Production: Hughes Aircraft, Martin, and North American (Columbus). Industry response to this modified PDP is scheduled for mid-July 1965.

Project WALLEYE is a television guided glide bomb.

CALENDAR OF EVENTS

WEST COAST WINTER CONVENTION ON MILITARY ELECTRONICS, Los Angeles, Calif., Feb. 3-5.

American Business Press Assn. 14th ANNUAL STATE OF THE NATION DINNER, Shoreman Hotel, Washington, D. C., Feb. 4.

ARMY FIREPOWER DEMONSTRATION, Ft. Sill Okla., Feb. 20.

Iron Gate Squadron, Air Force Assn. AIR FORCE BALL, Waldorf Astoria Hotel, New York, N. Y., Feb. 22.

NATIONAL SECURITY INDUSTRIAL ASSN. MEETING, Key West, Fla., Feb. 24-26.

RESERVE OFFICERS ASSN. MID-WINTER CONFERENCE, Washington, D. C., Feb. 24-27.

COLORADO SOCIETY OF ENGINEERS CONVENTION, Denver, Colo., Feb. 26-27.

AMERICAN CONCRETE INSTITUTE MEETING, San Francisco Calif., March 1-4.

SOCIETY OF PLASTIC ENGINEERS MEETING, Boston, Mass., March 2-5.

STEEL FOUNDERS SOCIETY OF AMERICA CONVENTION, Chicago, Ill., March 8-9.

National Space Club, GODDARD MEMORIAL DINNER, Sheraton-Park Hotel, Washington, D. C., March 19.

CAPABILITIES OF ARMY AIRCRAFT DEMONSTRATION, Ft. Sill, Okla., March 20.

INSTITUTE OF ELECTRICAL & ELECTRONIC ENGINEERS MEETING, New York, N. Y., March 22-25.

National Security Industrial Assn. FORRESTAL DINNER, Washington, D. C., March 25.

NATIONAL ASSOCIATION OF PLASTIC FABRICATORS CONVENTION, Las Vegas, Nev., May 18-22.

DIPEC

(*Cont. from Page 4*)

tory control, uniform equipment coding, recording and reporting.

• Preparing reports and analyses for the Secretary of Defense and Military Services.

• Procuring general purpose type industrial plant equipment when agreed upon with the Military Services. (DIPEC is not procuring at this time. A long range study to determine requirements was initiated when the Center was activated and it was anticipated that it would take at least two years to complete this study.)

• Conducting the industrial plant equipment portion of the Defense Standardization Program.

• Performing the redelegated statutory responsibilities of the Secretary of Defense with respect to the Industrial Plant Equipment portion of the National Industrial Reserve Act of 1948.

DIPEC has technical direction over 11 central storage facilities. These facilities store, repair, rebuild, preserve and/or test Department of Defense-owned industrial plant equipment.

The address for the Center is: Defense Industrial Plant Equipment Center, Defense Depot Memphis, Tenn., 38102; telephone: Area Code 901, 458-4411.

BUSINESS OPPORTUNITY FAIR ANNOUNCED

The Defense General Supply Center (DGSC), Richmond, Va., which is responsible for procuring supplies for the Military Services, will hold its Business Opportunity Fair at the Center May 12 through 14.

The Center, a field activity of the Defense Supply Agency, is commanded by Rear Admiral J. S. Dietz. It procures furniture, food preparation equipment, recreation and athletic equipment, office supplies, and a number of other items.

During the fair, which falls within Armed Forces Week, DGSC will display thousands of items in the general supplies category which it expects to be purchasing in the coming year, together with specifications, drawings and descriptions. Small Business advisers, along with engineering and quality control technicians, will be on hand to offer counsel.

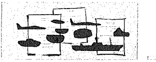
Details may be secured by writing the Director, Procurement and Production Directorate, Defense General Supply Center, Richmond, Va. 23212

TRAFFIC MANAGEMENT

(*Cont. from Page 10*)

transportation procedures will be greatly simplified because one agency will be responsible for each shipment from point of origin to the terminal, in the case of air shipments, and through the terminal in the case of ocean shipments.

These changes and the elimination of three ocean terminals are providing an annual savings of $14.1 million.



DEFENSE PROCUREMENT

Contracts of $1,000,000 and over awarded during month of December 1964:

DEFENSE SUPPLY AGENCY

1—**Texaco, Inc.**, New York, N. Y. $1,789,200. 13,020,000 gallons of aviation gasoline. Defense Fuel Supply Center, Washington, D. C.

4—**General Aniline & Film Corp.**, Binghamton, N. Y. $1,668,317. 84,062 packages of radiographic film for use by the Armed Forces. Binghamton. Defense Medical Supply Center, Brooklyn, N. Y.

7—**Reylon Fabrics, Inc.**, New York, N. Y. $1,865,062. 1,225,000 yards of cloth. Lancett, Ala. and Westerly, R. I. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

—**Burlington Industries, Inc.**, New York, N. Y. $2,200,824. 1,472,000 yards of cloth. Cooleemee, N. C. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

—**J. P. Stevens & Co., Inc.**, New York, N. Y. $1,103,062. 730,500 yards of cloth. Wallace, S. C. and Roanoke Rapids, N. C. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

—**Texas City Refining, Inc.**, Texas City, Tex. $1,630,900. 11,340,000 gallons of aviation gasoline. Defense Fuel Supply Center, Washington, D. C.

—**Socony Mobile Oil Co., Inc.**, New York, N. Y. $1,118,260. 8,400,000 gallons of aviation gasoline. Defense Fuel Supply Center, Washington, D. C.

9—**Texaco, Inc.**, New York, N. Y. $7,761,000. 58,800,000 gallons of aviation gasoline. Defense Fuel Supply Center, Washington, D. C.

10—**General Cable Corp.**, New York, N. Y. $4,809,825. 91,009 reels of telephone cable. Providence, R. I. Defense Industrial Supply Center, Philadelphia, Pa.

11—**Sinclair Refining Co.**, New York, N. Y. $1,150,800. 8,400,000 gallons of aviation gasoline. Defense Fuel Supply Center, Washington, D. C.

15—**C. M. London Co.**, New York, N. Y. $1,419,392. 863,000 yards of cotton cloth. Lewiston, Maine and Bradford, R. I. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

16—**Delta Petroleum Co., Inc.**, New Orleans, La. $1,101,095. 2,875,250 gallons of lubricating oil. Defense Fuel Supply Center, Washington, D. C.

New York, N. Y. $2,662,000. 16,800,000
tion gasoline. Defense Fuel Supply

an Francisco, Calif.
f aviation gasoline.
hington, D. C.
. $2,578,220. 34,500

Value D. Material
F. Contracting

rolls of aerial film. Rochester. Defense General Supply Center, Richmond, Va.

29—**Burlington Industries, Pacific Mills Div.**, Halifax, Va. $1,072,727. 283,900 yards of wool cloth. Raeford, N. C., and Halifax and Clarksville, Va. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

30—**E. I. DuPont de Nemours & Co., Inc.**, Wilmington, Del. $1,138,226. 1,038,455 gallons of solvent. Niagara Falls, N. Y. Defense Fuel Supply Center, Washington, D. C.

—**Pembroke, Inc.**, Egg Harbor City, N. J. $2,356,509. 98,434 men's wool coats. Egg Harbor City. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

ARMY

1—**E. J. Albrecht Co.**, Chicago, Ill. $6,224,826. Deepen and widen the channel at Turtle Creek Flood Protection Project. Wilmerding and Monroeville Boroughs and North Versailles Township, Allegheny County, Pa. Pittsburgh Engineer Dist., Pittsburgh, Pa.

2—**General Electric Co.**, Burlington, Vt. $2,862,000. 72 M12 Vulcan Pods. Burlington. Boston Procurement Dist., Boston, Mass.

4—**Dondlinger & Sons Construction Co.**, Wichita, Kan. $13,640,666. Construction of an Enlisted Men's Barracks Complex. Ft. Leonard Wood, Mo. Dist. Corps of Engineers, Kansas City, Mo.

—**Thomas Construction Co. Inc.**, St. Joseph, Mo. $1,244,600. Construction equipment training facility. Ft. Leonard Wood, Mo. Dis. Corps of Engineers, Kansas City, Mo.

—**Albion Malleable Iron Co.**, Albion, Mich. $3,319,624. 2 75-inch rocket components. Hillsdale, Mich. Ammunition Procurement Supply Agency, AMC, Joliet, Ill.

—**General Electric Co.**, Burlington, Vt. $2,800,000. XM-12 Vulcan Pods. Burlington. Procurement Dist., AMC, Boston, Mass.

—**Malan Construction Co. of Koppers Co., Inc.**, New York, N. Y. $8,079,003. Construction of a rocket engine test stand. The NASA Mississippi Test Facility. Army Corps of Engineers, Mobile, Ala.

8—**C. F. Bean, Inc.**, Plaquemine, La. $1,571,550. Flood control work on the Mississippi River and tributaries project. Berwick, St. Mary Parish, La. U. S. Army Engineer Dist., New Orleans, La.

9—**Ford Motor Co., Fort Motor Div.**, Dearborn, Mich. $1,804,538. 465 tractor trucks. Louisville, Ky. Army Tank Automotive Center, AMC, Warren, Mich.

—**Chrysler Motor Corp.**, Detroit, Mich. $1,264,644. 625 cargo pickup trucks. Warren, Mich. Army Tank Automotive Center, AMC, Warren, Mich.

10—**Smith & Sapp Construction Co.**, Orlando, Fla. $1,342,629. Construction of flight crew facility. Merritt Island, Fla. Canaveral Engineer Dist., Merritt Island, Fla.

11—**Kaiser-Jeep Corp.**, South Bend, Ind. $14,656,248. 1,139 5-ton trucks. South Bend. U. S. Army Mobility Command, AMC, Warren, Mich.

15—**Peter Kiewit Sons' Co.**, Vancouver, Wash. $2,964,412. Grading and excavation work at John Day Lock and Dam Project. Denton County, Wash. Dist. Corps of Engineers, Walla Walla, Wash.

—**H. L. Bishop, Inc.**, **Distrian Gravel Corp.** and **Peter Distrian**, Long Island, N. Y. $2,717,670. Construction work at Fire Island Inlet to Montauk Point Beach Erosion and Hurricane Project. Long Island, N. Y. Dist. Corps of Engineers, New York, N. Y.

—**Midwest Construction Co.**, Nebraska City, Neb. $1,009,656. Rehabilitation and stone construction work at Sabine-Neches Waterway Project. Port Arthur, Tex. Dist. Corps of Engineers, Galveston, Tex.

—**Scovill Mfg. Co.**, Waterbury, Conn. $1,338,621. Metal parts for bombs. Waterbury. Procurement Dist., AMC, Boston, Mass.

16—**Mike Hooks, Inc.**, Lake Charles, La. $1,979,155. Enlargement of a channel of the Calcasieu River and Pass Project. Lake Charles. Engineer Dist., New Orleans, La.

17—**Rubin Construction Co.**, West Palm Beach, Fla. $1,812,705. Excavation work at the Cross Florida Barge Canal Project. Dunnellin, Fla. Dist. Corps of Engineers, Jacksonville, Fla.

—**Bell Aero Systems Co., a div. of Bell Aerospace Corp.**, Buffalo, N. Y. $1,510,000. Fire control sighting equipment for helicopters. Buffalo. Frankford Arsenal, AMC, Philadelphia, Pa.

18—**Olin Mathieson Chemical Corp.**, Winchester Western Div., East Alton, Ill. $2,425,500. 7.62-mm cartridges. East Alton. Frankford Arsenal, AMC, Philadelphia, Pa.

—**Fullerton Construction Co.**, Sacramento, Calif. $1,630,000. Construction at the NASA Test Facility. Hancock County, Miss. Dist. Corps of Engineers, Mobile, Ala.

—**AVCO Corp.**, Electronics Div., Cincinnati, Ohio. $2,607,245. Operation, modification and maintenance of missile tracking and instrumentation radars and interfacing equipment. White Sands, N. M.; Green River, Utah; Blanding, Utah; and Fort Wingate, N. M. The Missile Range, AMC, White Sands, N. M.

—**General Electric Co.**, Burlington, Vt. $1,305,800. Armament subsystems for helicopters, repair parts and inspection equipment. Burlington. Procurement Dist., AMC, Boston, Mass.

21—**Allis Chalmers Mfg. Co.**, York, Pa. $4,058,085. Design, manufacture, test, and delivery of a 46,000-horsepower hydraulic turbine and associated equipment. Manufacture of equipment at York and installation at Robert S. Kerr Lock and Dam, Sallisaw, Okla. Tulsa Dist. Corps of Engineers, Okla.

—**Chrysler Motor Corp.**, Dearborn, Mich. $1,131,221. 415 trucks. Dearborn, Mich.; Paris, Ill.; and Montpelier, Ohio. Army Tank Automotive Center, AMC, Warren, Mich.

—**Ford Motor Co.**, Dearborn, Mich. $1,373,444. 301 dump trucks. Louisville, Ky. Army Tank Automotive Center, AMC, Warren, Mich.

22—**Intercontinental Mfg. Co., Inc.**, Garland, Tex. $1,302,134. PERSHING missile motor cases. Garland. Redstone Arsenal, AMC, Huntsville, Ala.

—**Dravo Corp.**, Pittsburgh, Pa. $22,035,208. Excavation and construction work at Lock and Dam No. 6 at the Arkansas River and Tributaries Project. Little Rock, Ark. U. S. Army Engineer Dist., Little Rock, Ark.

—**Arthur Venneri**, East Westfield, N. J. $3,039,800. Construction of a clinical research building. U. S. Army Edgewood Arsenal, Md. Baltimore Engineer Dist.

—**Kaiser Jeep Corp.**, Toledo, Ohio. $1,998,491. 548 2½-ton cargo trucks with government furnished engines. South Bend, Ind. U. S. Army Mobility Command, AMC, Warren, Mich.

—**Westinghouse Electric Corp.**, Surface Div., Baltimore, Md. $1,793,390. Development and installation of a complete UHF/VHF cross section measurement system. Baltimore. U. S. Army Electronics Command, AMC, Fort Monmouth, N. J.

23—**Thiokol Chemical Corp.**, Bristol, Pa. $1,134,456. Signal pellets and rocket motors. Longhorn Army Ammunition Plant, Marshall, Tex. Ammunition Procurement & Supply Agency, AMC, Joliet, Ill.

—**Day & Zimmerman, Inc.**, Philadelphia, Pa. $5,989,548. Loading, assembling, and packing of ammunition and miscellaneous components. Lone Star Army Ammunition Plant, Texarkana, Tex. Ammunition Procurement & Supply Agency, AMC, Joliet, Ill.

—**Mine Safety Appliance Co.**, Pittsburgh, Pa. $2,694,369. Protective field masks, filter elements, and repair parts. Esmond, R. I. U. S. Army Edgewood Arsenal, AMC, Md.

—**Johnson Furnace Co.**, Bellevue, Ohio. $2,064,600. 2,700 1½-ton cargo trailers. Army Tank Automotive Center, AMC, Warren, Mich.

—**Hyde Construction Corp.** and **Thornton Construction Co., Inc.**, Gulf Port, Miss. $1,789,617. Construction of roads, parking area and truck-rail weighing facility at NASA Mississippi Test Facility. Hancock, Miss. Engineer Dist., Mobile, Ala.

—**Guy H. James Construction Co.**, Oklahoma City, Okla. $1,699,045. Construction and excavation work at the Webbers Falls Lock and Dam Project. Arkansas River, Okla. Tulsa Engineer Dist., Okla.

—**Chamberlain Corp.**, Scranton, Pa. $4,561,410. 155mm projectile parts. Scranton, Pa. Ammunition Procurement & Supply Agency, AMC, Joliet, Ill.

—**Olin Mathieson Chemical Corp.**, Winchester Western Div., New Haven, Conn. $10,387,500. 7.62mm cartridges. U. S. Army Frankford Arsenal, AMC, Philadelphia, Pa.

—**Ford Motor Co.**, Dearborn, Mich. $2,774,063. 1,043 stake and platform trucks. Wayne, Mich. Army Tank Automotive Center, AMC, Warren, Mich.

—**Ford Co.**, Dearborn, Mich. $1,271,915. 230 tractor-trucks. Louisville, Ky. Army Tank Automotive Center, AMC, Warren, Mich.

—**International Harvester Co.**, Washington, D. C. $1,453,711. 266 various types of trucks. Springfield, Ohio; Birmingham, Ala.; Chattanooga, Tenn.; Brooklyn, N. Y.; Paris, Ill.; and Fort Wayne, Ind. Army Tank Automotive Center, AMC, Warren, Mich.

24—**Bulova Watch Co.**, Jackson Heights, N. Y. $5,238,270. Fuzes for various projectiles. Jackson Heights. Ammunition Procurement & Supply Agency, AMC, Joliet, Ill.

—**Bell Helicopter Co., a div. of Bell Aerospace Corp.**, Fort Worth, Tex. $98,517,345. UH–1B and UH–1D helicopters. Fort Worth, Tex. U. S. Army Aviation

Materiel Command, AMC, St. Louis, Mo.

28—**General Motors Corp., Truck & Coach Div.,** Pontiac, Mich. $10,246,798. 850 ambulance/passenger buses. Lima, Ohio, and Kosciusko, Miss. Army Tank Automotive Center, AMC, Warren, Mich.

—**Carpenter Bros.,** Dallas, Tex. $1,159,000. Construction of a mobile equipment maintenance building at the NASA Mississippi Test Facility. Hancock County, Miss. Dist. Corps of Engineers, Mobile, Ala.

—**Dynalectron Corp.,** Washington, D. C. $2,508,377. Services performed in the installation, operation, and maintenance of government-owned data-collecting facilities. White Sands Missile Range. White Sands Missile Range, AMC, N. M.

—**Radio Corp. of America, RCA Service Co. div.,** Camden, N. J. $1,131,100. Personnel, vehicles, spare parts, and equipment required for installation, operation, maintenance, repair and removal of communication systems and supporting facilities. White Sands and Fort Wingate, N. M.; and Green River and Blanding, Utah. White Sands Missile Range, N. M.

—**Telecomputing Services, Inc.,** Panorama City, Calif. $1,199,873. Data reduction reports on missiles and test vehicles. White Sands, N. M. White Sands Missile Range, N. M.

—**Collins Radio Co.,** Cedar Rapids, Iowa. $5,978,511. Communication sets (AN/ARC–102) and ancillary equipment for air-ground communications. Cedar Rapids. Chicago Procurement Dist., AMC, Chicago, Ill.

29—**Umpqua River Navigation Co.,** Reedsport, Ore. $1,244,600. Repair of a jetty at the mouth of the Columbia River. Astoria, Ore. Dist. Corps of Engineers, Portland, Ore.

30—**Technical Operations, Inc.,** Burlington, Mass. $2,130,000. Research and scientific studies. Ft. Belvoir, Va. Procurement Dist., AMC, Boston, Mass.

—**Snodgrass & Sons Construction Co., Inc.,** Wichita, Kan. $1,247,476. Construction of four docks for fighter aircraft maintenance. McConnell AFB, Wichita, Kan. Army Engineer Dist., Kansas City, Mo.

—**International Harvester Co.,** Washington, D. C. $1,803,784. 420 school buses. Highpoint, N. C., and Fort Valley, Ga. Army Tank Automotive Center, AMC, Warren, Mich.

—**Trinity Construction Co., Inc.,** Houston, Tex. $2,319,502. Drainage, excavation and construction work at Buffalo Bayou, Tex., Project. Houston. Dist. Corps of Engineers, Galveston, Tex.

—**Amron Corp.,** Waukesha, Wis. $9,849,500. Components for the 155mm projectile. Waukesha; Port Huron, Mich.; and other locations. Ammunition Procurement & Supply Agency, AMC, Joliet, Ill.

—**AVCO Corp., Ordnance Div.,** Richmond, Ind. $9,631,143. 155mm projectile components. Richmond; Detroit, Mich.; and other locations. Ammunition Procurement & Supply Agency, AMC, Joliet, Ill.

—**Honeywell, Inc.,** North Hopkins, Minn. $6,207,910. 155mm shell components. New Brighton, Minn.; Riverside, Calif.; and other locations. Ammunition Procurement & Supply Agency. AMC, Joliet, Ill.

31—**FMC Corp.,** New York, N. Y. $2,326,566. Production of items at the Newport Army Chemical Plant. Newport, Ind. Ammunition & Procurement & Supply Agency, AMC, Joliet, Ill.

—**Terminal Construction Corp.,** Wood-Ridge, N. J. $11,400,000. Construction of 11 troop barracks and supporting facilities. Ft. Dix, N. J. Dist. Corps of Engineers, New York, N. Y.

—**Piracci Construction Co., Inc.,** Baltimore, Md. $4,601,127. Construction of an academic building and an auditorium. Carlisle Barracks, Pa. U. S. Army Engineer Dist., Baltimore, Md.

—**Chrysler Motor Corp.,** Detroit, Mich. $1,367,736. 315 trucks of various types. Milwaukee, Wis., and Parris, Ill. Army Tank Automotive Center, AMC, Warren, Mich.

—**Honeywell, Inc.,** Hopkins, Minn. $1,044,000. Research and development of ammunition. Hopkins. Picatinny Arsenal, AMC, Dover, N. J.

—**General Steel Tank Co., Inc.,** Reidsville, N. C. $1,226,485. Portable fuel supply systems. Reidsville. U. S. Army Mobility Equipment Center, AMC, St. Louis, Mo.

—**Chamberlain Corp.,** Scranton, Pa. $7,188,536. Metal parts for 175mm projectiles. Scranton Army Ammunition Plant. Ammunition Procurement & Supply Agency, AMC, Joliet, Ill.

—**Raytheon Co.,** Lexington, Mass. $1,165,373. Inspection, assembly and modification of HAWK items. Ft. Bliss, Tex. U. S. Army Missile Command, AMC, Redstone Arsenal, Huntsville, Ala.

—**General Motors Corp., Allison Div.,** Indianapolis, Ind. $6,154,170. Transmissions for 155mm howitzers, 8-inch howitzers, and light armored recovery vehicles (LARV). Indianapolis. Cincinnati Procurement Dist., AMC, Cincinnati, Ohio.

—**Bell Aerospace Corp., Bell Aerosystems Co. div.,** Buffalo, N. Y. $4,385,110. Fabrication and incorporation of improvements into Visual Airborne Target Locator Systems. Buffalo. U. S. Army Electronics Command, AMC, Ft. Monmouth, N. J.

—**Western Electric Co., Inc.,** New York, N. Y. $1,379,188. Modification kits for the HERCULES missiles. Burlington, N. C. U. S. Army Missile Command, AMC, Redstone Arsenal, Huntsville, Ala.

—**F. D. Rich Co.,** Stanford, Conn. $11,559,085. Construction of 12 Enlisted Men's barracks, xis company administration and storage buildings, six battalion headquarters and classroom buildings, one regimental headquarters building, branch post exchange, regimental gymnasium, unit chapel and support facilities. Ft. Jackson, S. C. Dist. Corps of Engineers, Savannah, Ga.

—**Atlantic Gulf & Pacific Corp.,** New York, N. Y. $1,419,936. Dredging work on a section of the Chesapeake and Delaware Canal. Turkey Point and Betterton, Md. U. S. Army Engineer Dist., Philadelphia, Pa.

—**Firestone Tire & Rubber Co.,** Akron, Ohio. $4,202,064. 173,424 track assembly replacement parts for combat vehicles. Noblesville, Ind. Army Tank Automotive Center, AMC, Warren, Mich.

NAVY

1—**R. M. Wells Co., Inc.,** Quanah, Tex. $1,557,000. Improvements and alterations to Benmoreell Housing. Naval Station, Norfolk, Va. Bureau of Yards & Docks through Dir., Atlantic Div.

3—**Westinghouse Electric Corp.,** Baltimore, Md. $1,314,589. Missile control systems for F–4B aircraft. Baltimore. Bureau of Naval Weapons.

—Sperry Piedmont Co., Div. of Sperry Rand, Charlottesville, Va. $3,620,000. Pre-production models and production units of a stabilized gyro master compass control cabinet. Charlottesville. Bureau of Ships.

4—Raytheon Co., Portsmouth, R. I. $2,975,000. Material and services required to modify sonar systems installed aboard submarines. Portsmouth. Bureau of Ships.

—TRG, Inc., Melville, N. Y. $2,380,589. Developmental program to demonstrate the feasibility and potential of an advanced type of sonar system for use aboard naval ships. Melville. Bureau of Ships.

—Hughes Tool Co., Aircraft Div., Culver City, Calif. $1,050,000. Completion of research and development on 20mm aircraft gun mounts, Mk-4. Culver City. Bureau of Naval Weapons.

—Hughes Tool Co., Aircraft Div., Culver City, Calif. $9,568,350. Production of Mk-4 gun pods. Culver City. Bureau of Naval Weapons.

—Raytheon Co., Lexington, Mass. $1,104,414. Engineering services and flight testing in connection with the SPARROW III missile program. Flight testing at Oxnard, Calif., and remainder of work at Bedford, Mass. Bureau of Naval Weapons.

—Teletype Corp., Skokie, Ill. $1,046,732. Teletype equipment. Skokie. U. S. Navy Purchasing Office, Washington, D. C.

—Kaman Aircraft Corp., Bloomfield, Conn. $1,757,462. Spare parts for the UH2A/B helicopter aircraft. Bloomfield. U. S. Navy Aviation Supply Office, Philadelphia, Pa.

—General Electric Co., Heavy Military Electronics Dept., Syracuse, N. Y. $1,511,154. Developmental program to demonstrate the feasibility and potential of an advanced type of sonar system for use aboard naval ships. Syracuse. Bureau of Ships.

—General Dynamics/Electronics, Rochester, N. Y. $1,682,101. Developmental program to demonstrate the feasibility and potential of an advanced type of sonar system. Rochester. Bureau of Ships.

7—Westinghouse Electric Corp., Underseas Div., Baltimore, Md. $1,098,800. Mk 48 torpedoes. Baltimore. Bureau of Naval Weapons.

—Contromatics Corp., Rockville, Conn. $1,745,607. Hull and back-up valves and related parts for the submarine program. Rockville. U. S. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—TRW Space Technology Lab., Redondo Beach, Calif. $6.1 million. Services necessary to perform systems analysis, integration engineering, test support, technical support and engineering evaluation for the Manager, Antisubmarine Warfare Systems Project Office, Office of Naval Material. Contractor facilities in Los Angeles, Calif., and Washington, D. C., and at Navy Field facilities. Dept. of the Navy.

10—Pratt & Whitney Aircraft Div., United Aircraft Corp., East Hartford, Conn. $1,800,418. Spare parts for J52/4P and 06A aircraft engines used on A-4E (SKYHAWK) and A-6A (INTRUDER) aircraft. East Hartford. Aviation Supply Office, Philadelphia, Pa.

—A. J. Kellos Construction Co., Inc., Augusta, Ga. $1,002,180. Construction at the Fleet Ballistic Missile Submarine Training Center, U. S. Naval Base. Charleston, S. C. Southeast Div., Bureau of Yards & Docks.

—C. R. Fedrick, Inc., Novato, Calif. $1,570,000. Construction of an Air Force Air Defense Command fighter dispersal facility. Siskiyou County Airport, Calif. Dist. Public Works Officer, Bureau of Yards & Docks.

—Sperry Gyroscope Co., Marine Div., Syosset, N. Y. $1,900,000. Engineering services in the overhaul of inertial navigation subsystem equipment aboard nuclear powered fleet ballistic missile submarines. Various shipyards throughout the country. Bureau of Ships.

—Sperry Rand Corp., Syosset, N. Y. $1,284,650. Navigation subsystem equipments for installation in POLARIS submarines. Sub-contractor plants located throughout the United States. Bureau of Ships.

—Pratt & Whitney Aircraft Div., United Aircraft Corp., East Hartford, Conn. $1,029,748. Cylinder assemblies for the R4360-63A aircraft engine on the C-124C cargo transport aircraft. East Hartford. Aviation Supply Office, Philadelphia, Pa.

11—Maxson Electronics Corp., Long Island, N. Y. $1,210,125. AQM-37 supersonic targets for missile firings. Old Forge, Pa. U. S. Navy Purchasing Office, Washington, D. C.

14—Pascoe Steel Corp., Pomona, Calif. $1,231,756. 64 pontoon assemblies. Columbus, Ga. and Pomona. Navy Purchasing Office, Los Angeles, Calif.

—General Dynamics Corp., Pomona, Calif. $3,516,988. TERRIER/TARTAR missile program. Pomona. Bureau of Naval Weapons.

—North American Aviation, Inc., Autonetics Div., Anaheim, Calif. $2,993,662. Modification and repair of mechanical assemblies, parts and components of Fleet Ballistic Missile Submarine ship inertial navigation system (SINS) equipment. Anaheim. Bureau of Ships.

—Sperry Gyroscope Co., Syosset, N. Y. $1,846,763. Field engineering services during installation and checkout of navigation equipment aboard nuclear submarines. Various shipyards throughout the country. Bureau of Ships.

15—American Construction Co., Inc., Washington, D. C. $1,970,000. Construction of a sector focusing cyclotron building at the U. S. Naval Research Lab. Washington, D. C. Area Public Works Officer, Chesapeake, Bureau of Yards & Docks.

—Collins Radio Co., Richardson, Tex. $1,642,340. Six microwave sets for naval shore stations, engineering services, spare parts and associated technical manuals. Richardson. Bureau of Ships.

17—Sperry Rand Corp., Sperry Gyroscope Div., Syosset, N. Y. $1,919,000. Engineering services on Ships Inertial Navigation System (SINS) equipment on fleet ballistic missile submarines. Shipyards throughout the United States. Bureau of Ships.

—Stewart Warner Electronics Div., Stewart-Warner Corp., Chicago, Ill. $2,601,096. Navigational sets and spare parts for Navy and Air Force aircraft. Chicago. U. S. Navy Purchasing Office, Washington, D. C.

—Arthur A. Johnson, New York, N. Y. $1,137,620. Construction of a fleet ballistic missile replenishment facility at the U. S. Naval Station. Newport, R. I. Dist. Public Works Officer, First Naval Dist., Bureau of Yards & Docks.

—Dyson & Co., Inc., Pensacola, Fla. $1,281,252. Construction of an aircraft hangar at the U. S. Naval Air Station. Pensacola. Dir., Southeast Div., Bureau of Yards & Docks.

—Daley Corp., San Diego, Calif. $1,189,000. Construction of a parking apron and helicopter landing pads at the Naval Auxiliary Air Station, Ream Field. Imperial Beach, Calif. Dir., Southwest Div., Bureau of Yards & Docks.

18—Marinette Marine Corp., Marinette, Wis. $1,656,200. 52 steel-hulled, 56-foot, medium landing craft (LCM). Marinette. Bureau of Ships.

—Ling-Temco-Vought, Inc., LTV Aerosystems Div., Greenville, Tex. $1,322,503. Classified work on Navy aircraft. Greenville. Bureau of Naval Weapons.

—Knapps-Stiles, Inc., Grand Rapids, Mich. $2,727,000. Construction of 200 family housing units. Naval Air Station, Alameda, Calif. Dist. Public Works Officer, Twelfth Naval Dist., Bureau of Yards & Docks.

—Electronics & Missile Facilities, Inc., Valley Stream, N. Y. $7,150,000. Construction of a hospital, heating plant, and barracks at the U. S. Naval Hospital. Long Beach, Calif. Dir., Southwest Div., Bureau of Yards & Docks.

—General Electric Co., Heavy Military Electronics Dept., Syracuse, N. Y. $2,602,530. Development of major modification kit for installation on the sonar of the USS WILKINSON (DL–5). Syracuse. Bureau of Ships.

—National Steel & Shipbuilding Co., San Diego, Calif. $36,848,000. Construction of two Combat Store Ships (AFS 4 and 5). San Diego. Bureau of Ships.

21—Bendix Corp., Mishawaka, Ind. $2,500,000. Materials for procurement of TALOS missile guidance control and airframes. Mishawaka. Bureau of Naval Weapons.

—Raytheon Co., Lexington, Mass. $1,627,000. Data converters for TARTAR missile control radar sets. Wayland, Mass. Bureau of Naval Weapons.

22—United Aircraft Corp., Sikorsky Aircraft Div., Stratford, Conn. $13,368,000. SH–3A SEA KING helicopters. Stratford. Bureau of Naval Weapons.

—Specialities, Inc., Charlottesville, Va. $2,543,117. Approach compensators used for throttle control on carrier-based aircraft. Charlottesville. Navy Purchasing Office, Washington, D. C.

—Pratt & Whitney Aircraft Div., United Aircraft Corp., East Hartford, Conn. $4,119,807. Spare parts for TF–33 aircraft engines. East Hartford. U. S. Navy Aviation Supply Office, Philadelphia, Pa.

23—Philco Corp., Communications & Weapons Systems Div., Philadelphia, Pa. $3,721,956. SIDEWINDER missiles. Philadelphia. Bureau of Naval Weapons.

—Lockheed Missile & Space Co., Sunnyvale, Calif. $19,432,798. Tactical engineering services for the POLARIS missile system. Sunnyvale. Special Projects Office.

—University of California, Berkeley, Calif. $1,812,921. Continuation of a program of oceanographic studies. Office of Naval Research.

—University of Alaska, College, Alaska. $1,250,000. Continuation of an Arctic research program. Arctic Research Lab., Point Barrow, Alaska, and at field stations. Office of Naval Research.

28—General Electric Co., Schenectady, N. Y. $3,388,793. Design and furnishing of nuclear reactor components. Schenectady. Bureau of Ships.

—Sperry Rand Corp., Sperry Gyroscope Co., Div., Great Neck, N. Y. $2,936,200. Integrated navigation systems for installation aboard APOLLO tracking ships. Great Neck. Bureau of Ships.

—Westinghouse Electric Corp., Baltimore, Md. $6,000,000. Design and development of a missile guidance system. Baltimore. Bureau of Naval Weapons.

—Alcan-Pacific Co., Sacramento, Calif. $2,427,000. Construction of 160 family housing units. Naval Post Graduate School, Monterey, Calif. Dist. Public Works Officer, Twelfth Naval Dist. Bureau of Yards & Docks.

—Westinghouse Electric Corp., Washington, D. C. $1,498,000. A retrofit of a SSBN for a POLARIS launcher system. Sunnyvale, Calif. Special Projects Office.

—Westinghouse Electric Corp., Washington, D. C. $2,253,300. A POLARIS launcher system for the United Kingdom. Sunnyvale, Calif. Special Projects Office.

—Dynalectron Corp., Parndyn Div., Washington, D. C. $1,126,607. Data processing and related technical work on data obtained from test of missile components. U. S. Naval Ordnance Lab., Corona, Calif. U. S. Navy Purchasing Office, Los Angeles, Calif.

29—General Electric Co., Schenectady, N. Y. $14,868,207. Design and furnish nuclear reactor components. Schenectady. Bureau of Ships.

30—McDonnell Aircraft Corp., St. Louis, Mo. $40,750,000. F–4D PHANTOM aircraft for the Air Force. St. Louis. Bureau of Naval Weapons.

—United Aircraft Corp., Pratt & Whitney Aircraft Div., East Hartford, Conn. $4,385,953. Spare parts for TF–33–P7 engines. East Hartford. U. S. Navy Aviation Supply Office, Philadelphia, Pa.

—Sperry-Piedmont Co., div. of Sperry-Rand, Charlottesville, Va. $3,498,155. Target control system and spare supporting components for the DASH program. Charlottesville. U. S. Navy Purchasing Office.

—Raytheon Co., Space & Information Systems Div., Sudbury, Mass. $3,337,962. Manufacture of POLARIS Mk 2 electronic guidance assemblies. Waltham, Mass. Special Project Office.

—General Dynamics/Pomona, Calif. $13,050,000. Development and pilot production of a medium range standardized version of a TARTAR/TERRIER type surface-to-air missile. Pomona. Bureau of Naval Weapons.

AIR FORCE

1—Lockheed-Georgia Co., Marietta, Ga. $1,075,853. Production of C–130E aircraft for the Military Assistance Program. Marietta. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Garret Corp., Phoenix, Ariz. $1,725,112. Aircraft engine starters and data for their installation in F–4C and RF–4C aircraft. Phoenix. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Lear Siegler, Inc., Grand Rapids, Mich. $1,085,172. Engine instrumentation systems for C–141A aircraft. Grand Rapids. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

2—Space-General Corp., El Monte, Calif. $1,350,000. Design, fabrication, and testing of satellite payloads. El Monte. Electronics Systems Div., AFSC, Hanscom

Field, Mass.

—Radio Corp. of America, New York, N. Y. $1,310,370. Work on a voice communication switching system. New York. Electronics System Div., AFSC, Hanscom Field, Mass.

4—American Electric, Inc., Paramount, Calif. $1,302,072. Production of 25-pound practice training bombs. Spring City, Tenn., and Paramount. Ogden Air Materiel Area, AFLC, Hill AFB, Utah.

—Sperry Rand Corp., Phoenix, Ariz. $1,236,227. Production of components and related material for the C–12 gyroscopic compass system. Phoenix. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Lockheed Missiles & Space Co., Sunnyvale, Calif. $3,180,000. Work on the GEMINI program target vehicle system. Sunnyvale. Space Systems Div., AFSC, Los Angeles, Calif.

—Laboratory for Electronics, Inc., Boston, Mass. $4,504,140. Production of doppler radar set components, spare parts, and related equipment. Danvers, Mass. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Geotechnical Corp., Garland, Tex. $2,101,442. Classified project. Garland. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Hughes Aircraft Co., Culver City, Calif. $1,300,000. Integration of the FALCON missile with F–4 PHANTOM series aircraft. Culver City. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Boeing Co., Seattle, Wash. $4,500,000. Research, development, test and engineering work on MINUTEMAN. Patrick AFB, Fla., and Seattle. Ballistic Systems Div., AFSC, Norton AFB, San Bernardino, Calif.

—Rand Corp., Santa Monica, Calif. $13,780,000. Aerospace research services. Santa Monica. Air Force Office of Scientific Research, Washington, D. C.

—Analytical Services, Inc., Alexandria, Va. $1,300,000. Analytical studies concerning weapon systems in strategic, tactical, air defense, and logistic operations for the Air Force. Fairfax County, Va.

7—Hayes International Corp., Birmingham, Ala. $1,083,316. Inspection and repair as necessary of C–97F aircraft. Birmingham. Oklahoma City Air Materiel Area, AFLC, Tinker AFB, Okla.

—North American Aviation, Inc., Los Angeles, Calif. $1,112,324. Modification kits for F–100 aircraft. Los Angeles. Sacramento Air Materiel Area, AFLC, McClellan AFB, Calif.

9—Ling Temco Vought, Inc., Greenville, Tex. $1,175,000. Navigation systems and related equipment for RC–135B aircraft. Greenville. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—AVCO Corp., Stratford, Conn. $42,839,548. T–53 aircraft engines and related material for Army and Navy aircraft. Stratford. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Northrop Corp., Hawthorne, Calif. $4,242,000. F–5A/B aircraft program. Hawthorne. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

10—B. F. Goodrich Co., Akron, Ohio. $1,408,580. Replacement tires for F–100, F–102 and F–106 aircraft. Akron. Ogden Air Materiel Area, AFLC, Hill AFB, Utah.

—Sylvania Electric Products, Inc., Mountain View, Calif. $4,614,000. Electronics portion of countermeasures equipment. Santa Cruz, Calif. Electronics Systems Div., AFSC, L. G. Hanscom Field, Bedford, Mass.

11—Giannini Controls Corp., Caldwell, N. J. $1,360,000. Flight loads data recorders for F/RF–4 aircraft. Caldwell. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Lockheed Aircraft Corp., Marietta, Ga. $4,184,691. Spare parts for C–141A aircraft. Marietta. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

15—Aerojet General Corp., Azusa, Calif. $3,500,000. Design, manufacture, and provision of radiometric equipment. Azusa. Space Systems Div., AFSC, Los Angeles, Calif.

16—Aerojet General Corp., Sacramento, Calif. $2,744,000. Research and development for the TITAN III transtage engine. Sacramento. Ballistic Systems Div., AFSC, Norton AFB, San Bernardino, Calif.

—Aerojet General Corp., Sacramento, Calif. $1,500,000. Research and development for Stage II MINUTEMAN motors. Sacramento. Ballistic Systems Div., AFSC, Norton AFB, San Bernardino, Calif.

—Standard Mfg. Co., Dallas, Tex. $1,111,580. Lift trucks. San Antonio Air Materiel Area, AFLC, Kelly AFB, Tex.

—Douglas Aircraft Co., Inc., Missile & Space Systems, Santa Monica, Calif. $4,000,000. THOR space boosters. Santa Monica. Space Systems Div., AFSC, Los Angeles, Calif.

18—Westinghouse Electric Corp., Baltimore, Md. $20,683,424. Low frequency communication sets. Baltimore. Electronic Systems Div., AFSC, L. G. Hanscom Field, Bedford, Mass.

—Hazeltine Corp., Little Neck, N. Y. $1,072,540. Communications equipment, spare parts, and data. Little Neck. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Electronic Specialty Co., Electronics Div., Los Angeles, Calif. $1,740,175. Automatic tracking telemetry antennae. Los Angeles. Air Force Eastern Test Range, AFSC, Patrick AFB, Fla.

22—General Electric Co., Cincinnati, Ohio. $5,000,000. Component improvement of J–79 turbojet aircraft engines for F–4 series and A–5 aircraft. Cincinnati. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

23—Lockheed-Georgia Co., Marietta, Ga. $6,328,734. Spare parts for C–141A aircraft. Marietta. Warner Robins Air Materiel Area, AFLC, Robins AFB, Ga.

24—Battelle Memorial Institute, Columbus, Ohio. $1,000,000. Continued operation of the Defense Metals Information Center. Columbus. Systems Engineering Group, AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Bogue Electric Mfg. Co., Paterson, N. J. $3,564,600. Diesel engine driven generator sets. Paterson. Sacramento Air Materiel Area, AFLC, McClellan AFB, Calif.

—AVCO Corp., Stratford, Conn. $12,446,286. T–55–L–7 engines for the Army CH–47A CHINOOK helicopter program. Stratford. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—J. Young Construction Co., Inc., Jacksonville, Fla. $1,528,100. Construction of family housing units. Robins AFB, Ga. Warner Robins Air Materiel Area, AFLC, Robins AFB, Ga.

28—Mitre Corp., Bedford, Mass. $8,200,000. Research, development, and experimentation in the field of command and control systems. Bedford. Electronic Systems Div., AFSC, L. G. Hanscom Field, Bedford, Mass.

30—Ralph M. Parsons Co., Los Angeles, Calif. $1,034,773. Personnel subsystems, data, and trainers for TITAN II missile bases. Los Angeles. Ballistic Systems Div., AFSC, Norton, AFB, San Bernardino, Calif.

—Washington Aluminum Co., Inc., Baltimore, Md. $1,274,758. Container sets for BULLPUP missile. Enterprise, Ala. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Laboratory for Electronics, Inc., Boston, Mass. $1,384,472. Repair and modification of components of F-105 radar and communications-navigations systems. Boston. Warner Robins Air Materiel Area, AFLC, Robins AFB, Ga.

—Fairchild Hiller Corp., Electronics Systems Div., Bay Shore, N. Y. $4,619,999. Electronic equipment for use with aerial cameras, including spares and aerospace ground equipment. Bay Shore. Ogden Air Materiel Area, AFLC, Hill AFB, Utah.

—Dynamic Corp. of America, Radio Engineering Labs, Long Island City, N. Y. $1,472,500. Communications equipment. Long Island City. Electronic Systems Div., AFSC, L. G. Hanscom Field, Bedford, Mass.

31—University of Michigan, Ann Arbor, Mich. $2,222,568. Research and investigation of radar techniques. Systems Engineering Group, AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Garret Corp, Phoenix, Ariz. $2,075,000. Experimental research and development on a space power unit. Phoenix. Systems Engineering Group, AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Space Sciences, Inc., Waltham, Mass. $1,117,900. Production of recording equipment and related material. Waltham. Middletown Air Materiel Area, AFLC, Olmstead AFB, Pa.

—General Electric Co., Cincinnati, Ohio. $94,423,000. J79-GE-15 engines for Air Force F-4 series aircraft. Evendale, Ohio. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—General Electric Co., Cincinnati., Ohio. $49,075,000. J79-GE-8A turbojet engines for Navy aircraft. Evendale, Ohio. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—General Electric Co., Cincinnati, Ohio. $10,950,000. Continuation of the C-5A (long range heavy logistics transport system) component verification and demonstrator engine program. Cincinnati. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—General Electric Co., Cincinnati, Ohio. $1,900,000. Project Definition Phase of the C-5A engines. Cincinnati. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—United Aircraft Corp., East Hartford, Conn., $9,600,000. Continuation of he C-5A component verification and demonstrator engine program. East Hartford. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—United Aircraft Corp., East Hartford, Conn. $1,432,000. Project Definition Phase of the C-5A engines. East Hartford. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Lockheed-Georgia Co., Marietta, Ga. $6,000,000. Project Definition Phase of the C-5A system. Marietta. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Boeing Co., Seattle, Wash. $6,000,000. Project Definition Phase of the C-5A. Seattle. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

—Douglas Aircraft Co., Long Beach, Calif. $6,000,000. Project Definition Phase of the C-5A. Long Beach. Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Dayton, Ohio.

DOD Standardization Program (*Cont. from Page 12*)

many years a leader in the field of quality control in the Air Force.

Creation of this new office lends increased emphasis to DOD efforts to:

1. Develop or acquire only data necessary to support well-defined research, development, procurement, production, and operation and maintenance requirements.
2. Acquire data most economically and in most usable form.
3. Enhance future development and support of military weapons systems by devising automated retrieval and dissemination techniques to make readily available all information acquired at Government expense both to DOD agencies and to authorized members of industry and the public.

The following are two examples of some of the far-reaching projects being sponsored by the Office of Technical Data & Standardization Policy:

1. A restatement of DOD policy governing the Defense Standardization Program is under way. The objective is to bring military standardization efforts into phase with changes in the development-procurement-production-supply-use cycle which have taken place in the last 10 years. Areas receiving attention under this project are the impact of weapon system management, development by contractors, and telescoping of the life cycle. Emphasis is being placed on the relationship of research and development, procurement, and logistic support functions to the accomplishment of standardization objectives. Responsibility for complete documentation of products and maximum use of applicable military standards is being stressed. Principal objectives are to maintain specifications current with the state of the art and to increase visibility of current items and components to designers.

2. The basic specification on preparation of drawings, MIL-D-70327, is being revised, with the cooperation of the Military Departments and a representative cross section of industry. Purpose of this revision is to obtain more flexibility in providing drawings which are fully adequate, but requiring only sufficient detail to meet military requirements. A direct result is expected to be a considerable overall reduction in the cost of drawings.

On the occasion of the first issue of the *Defense Industry Bulletin*, I wish to express the best wishes of the Army. I am certain that the effectiveness of the defense industry team will be enhanced by the coordination and cooperation brought about through this new medium of communications. The Army will lend its full support to keep industry informed of its requirements.

Stephen Ailes

Secretary of the Army

The Navy, as well as other branches of the Armed Forces, needs the best equipment produced at the lowest cost in order to provide the forces necessary to protect this country's principles. This is also the goal of U.S. industry which takes justifiable pride in being the backbone of our country's arsenal. The Navy is equally proud of its liaison and cooperation with industry over the years in the accomplishment of these common goals. The publication of the *Defense Industry Bulletin* will serve as an important media for the purpose of keeping defense industry informed of significant aspects related to this field of activity. It will receive the full support of the Navy Department.

Paul H. Nitze

Secretary of the Navy

I am pleased to have this opportunity to wish the *Defense Industry Bulletin* much success on the occasion of its first issue.

I am sure that publication of the *Bulletin* is a significant step toward keeping industry better informed about Department of Defense programs, and it will receive the full support of the Department of the Air Force.

Eugene M. Zuckert

Secretary of the Air Force

OFFICE OF THE SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

OFFICIAL BUSINESS

POSTAGE AND FEES PAID

Broader Use Of Zero Defects Type Programs Encouraged

Two Department of Defense (DOD) seminars designed to acquaint top management officials of Defense industries with the "Zero Defects" program were held recently in Washington, D. C., and San Diego, Calif.

The two one-day sessions featured presentations by top industry representatives and senior Defense Department officials and included panel discussions.

Zero Defects is a program which, through individual motivation, aims at improved product quality and the production of defect-free supplies, equipment and weapons.

The program initiated by Martin Company's Orlando Division in conjunction with U. S. Army Missile Command at Redstone Arsenal on the Pershing Missile program in January of 1962, has spread to more than 275 major defense contractors and to installations and activities of the U. S. Army and U. S. Air Force. The Defense Supply Agency and U. S. Navy are preparing to kick off their programs in the near future.

Over one million employees in the Defense Department and in defense industry are now participating in the Zero Defects program. Results reported by six major Defense contractors indicate an average reduction in overall defect rate of 47% and savings in the millions of dollars in scrap and rework.

In the keynote speech to the Zero Defects seminar held at the National Naval Medical Center, Bethesda, Md., November 17, 1964, General F. S. Besson, Jr., Commanding General, U. S. Army Materiel Command, stated, "Zero Defects is a program of inspired motivation aimed toward making members of the military and the industrial complex more quality conscious, dedicated to the goal of doing every job right the first time, and toward preventing defects as opposed to costly detection and rework."

An example of DOD interest in this program was indicated in a letter signed by Thomas D. Morris, former Assistant Secretary of Defense (Installation & Logistics) to the Military Departments and the Defense Supply Agency in which he stated, "During the past year I have been encouraged by the initiative of many Defense contractors in instituting programs that inspire high pride of craftsmanship among their personnel. These programs carry such names as Zero Defects, Pride, and similar challenging identifications, and have achieved no
ble results in terms of hi
improved quality and reducti
in cost of scrap and rewo
Programs such as these shou
be instituted throughout
Defense industries."

Information on the Zero
fects program may be obtain
by addressing queries to Dir
torate for Quality Control a
Reliability, Office, Assistant Se
retary of Defense (Installatio
& Logistics), Washington, D.
20301.

LASER ADVISORY GROUP FORMED

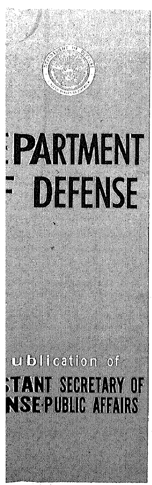
To develop a more effective LAS
program, a LASER Advisory Gro
(LAG) has been formed at the Ar
Materiel Command (AMC) Headqu
ters in Washington, D.C. The Group
composed of key management perso
nel throughout the AMC complex w
are responsible for the planning a
execution of various parts of
Army's overall LASER Research a
Development program. Its mission
to assist the AMC in achieving a w
coordinated, technically sound, e
nomically efficient LASER Resear
and Development program.

To achieve the best possible techni
cal excellence in carrying out its fu
tions, working groups will operate
specific technical fields of intere
These groups will consist of Ar
specialists in the fields of LAS
effects, propagation, materials, hi
energy, countermeasures, devices, te
niques, and applications.

The chairman of the LASER A
visory Group is Mr. Harold G. Blo
gett, U.S. Army Materiel Comman
Washington, D.C.

EFENSE INDUSTR
BULLETIN

e 1 No. 2 February 19



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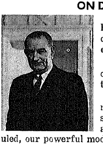
PRESIDENT LYNDON B. JOHNSON ON DEFENSE BUDGET



". . . In preparing this budget, have applied exacting tests of efficiency and necessity to all propose expenditures.

". . . We cannot afford second-bes defense forces. Neither can we affor to be wasteful.

"Our defense forces have reache new levels of strength. With the rapi strides made in the past four year and the future gains already scheduled, our powerful modern forces will be adequate to thei tasks for years to come.

". . . We still have improvements to make. We must maintain a strong research and development program to insur that our forces are always the most modern in the worl

"The 1966 budget fully provides for these needs.

"However, we are able to reduce our defense expenditure in 1966 because:

"• The buildup of our forces which started in 1961 nearly complete.

"• The vigorous cost reduction program of the Department of Defense is producing large savings.

"• Less effective and less economical forces are bein retired or reduced as promptly as possible. . . ."

DEFENSE INDUSTRY BULLETIN

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Hon. Cyrus R. Vance
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Hon. Arthur Sylvester
Assistant Secretary of Defense
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Col. J. B. Cross, USAF
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The *Defense Industry BULLETIN* is published monthly by the Business & Labor Division, Directorate for Community Relations, Office of the Assistant Secretary of Defense (Public Affairs). Use of funds for printing this publication was approved by the Director of the Bureau of the Budget.

The purpose of the *BULLETIN* is to serve as a means of communication between the Department of Defense (DOD) and its authorized agencies and defense contractors and other business interests. It will serve as a guide to industry concerning official policies, programs and projects, and will seek to stimulate thought by members of the defense-industry team in solving the problems that may arise in fulfilling the requirements of the DOD.

Material in the *BULLETIN* is selected to supply pertinent unclassified data of interest to the business community. Suggestions from industry representatives for topics to be covered in future issues should be forwarded to the Business & Labor Division.

The *BULLETIN* is distributed each month to the agencies of Department of Defense, Army, Navy, and Air Force, and to representatives of industry. Request for copies should be addressed to the Business & Labor Division, OASD/PA, Room 2E813, The Pentagon, Washington, D.C. 20301.

Contents of the magazine may be reprinted freely without requesting permission. Mention of the source will be appreciated.

Defense Department Budget Breakdov

In this issue of the *Defense Industry Bulletin* are feat financial tables pertaining to the Defense Budget. Prepare the Office of Assistant Secretary of Defense (Comptroller), t tables present the Fiscal Year 1966 budget in relation to budgets of recent years.

The tables appear on pages 17 to 25 and pertain to the follo areas:

1. Financial Summary, FY 1961 to FY 1966.

2. Direct Budget Plan (Total Obligational Authority (TO New Obligational Authority (NOA), Direct Obligations and penditures, FY 1964-1966.

3. Direct Budget Plan (TOA), New Obligation Authority, rect Obligations and Expenditures, FY 1966 By Function Service.

4. Procurement, FY 1964-1966.

5. Research, Development, Test and Evaluation, FY 1964-1

6. Estimated Obligations & Amounts Available for Obligat General Fund Appropriations, FY 1964-1966.

7. Estimated Expenditures and Amounts Available for Expe ture, FY 1964-1966.

8. Order of Magnitude Data on Comparative New Obligati Authority by Functional Title as if FY 1966 Budget Struct Had Been Adopted Circa 1948, FY 1954-1966.

9. Order of Magnitude Data on Comparative Expenditures Functional Title as if FY 1966 Budget Structure Had Been Adop Circa 1948, FY 1954-1966.

USAF Contract Management Division Established

Responsibility for Department of Defense contract managem activities in those contractor plants allocated to the Air F under the DOD National Plant Cognizance Program was assig to a new division of the Air Force Systems Command in Janu Called the Contract Management Division and located at Angeles Air Force Station, Los Angeles, Calif., activities of new organization will include Air Force Plant Representa Offices, Test Site Offices, and Contract Support Detachments, will eventually absorb the current Air Force field units responsibilities of the Western Contract Management Region, Angeles, Calif., some plant offices of the Eastern Contract M agement Region, Olmsted AFB, Pa., and the Central Cont Management Region, Wright-Patterson AFB, Ohio.

The division activities will allow orderly realignment of Air Force contract management responsibilities to assist in ach ing the objectives of actions taken by the DOD for overall contract administration improvement as recommended by Def Project 60.

Colonel Fred L. Rennels, Jr., who formerly commanded Western Contract Management Region, is the Commander of Contract Management Division.

Navy R&D Stages Of The Procurement Process

Procurement is in the broadest sense of the word a process. It is a chain of events in which an abstraction passes through linking stages of study, research, design, development, and testing and finally emerges as a hardware system ready for fleet use and full scale production.

Purchasing is, of course, part of this process. Yet it is but a link in the chain and the effectiveness with which it can be performed is inevitably conditioned by decisions in the early stages.

It follows therefore that purchasing personnel seek to influence these earlier decisions—make them as compatible as possible with sound procurement practice.

One avenue of influence is through feedback on procurement problems such as those created, for instance, by technical decisions that foreclose competition by prescribing overly restrictive specifications, failing to provide for technical data, or overlooking the potential for breakout.

Another is through Advance Procurement Planning (APP), which injects good business analysis and lays the foundation for effective procurement early in the planning stages.

Both measures, however, imply an appreciation and understanding of the full sweep of the procurement process. This article is an attempt to promote a better understanding of procurement by focusing on the Navy terms and procedures of the Research and Development (R&D) stages.

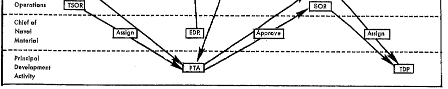
EARLY PLANNING DOCUMENTS

Eight documents figure prominently in the early stages of the procurement process. Their interrelationship is shown in Figure 1. Two of the documents, the Naval Research Requirement (NRR) and Exploratory Development Requirement (EDR), contribute primarily to the "pool" of knowledge that is the wellspring for the conception of new systems. The other six documents are part of a process that contributes directly to the evolution of particular systems.

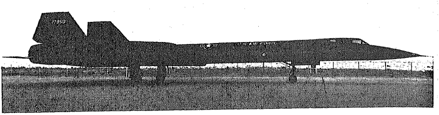
The eight planning documents are described as follows:

- **Naval Research Requirement (NRR).** The NRR is prepared by the Chief of Naval Research It starts basic research and applied research in support of future needs.
- **Exploratory Development Requirement (EDR).** The EDR is prepared by the Chief of Naval Development. It initiates studies and investigations on military problems which must be solved to meet future needs projected from the General Operational Requirement.
- **General Operational Requirement (GOR).** A GOR is prepared by the Chief of Naval Operations (CNO). It states the broad capabilities required in the fleet to meet the longrange needs.
- **Tentative Specific Operational Requirement (TSOR).** A TSOR is prepared by CNO. It initiates investigations leading to a new specific capability. The TSOR sets performance goals and provides information for making the trade-offs for an optimum system.
- **Proposed Technical Approaches (PTA).** A PTA is developed by the Principal Development Activity (PDA) which may be any of the Naval Bureaus, the Marine Corps and the Office of Naval Research, and includes Project Management Offices. Its key purpose is to provide trade-off analyses among the various approaches.
- **Advanced Development Objective (ADO).** An ADO is prepared by CNO. It outlines a requirement for an experimental system whose military usefulness, technical feasibility and financial acceptability is not yet assured. Its objective is to gain knowledge and, if necessary, to call for the development of hardware or experimentation to get the knowledge needed to support or to deny the issuance of a Specific Operational Requirement.
- **Specific Operational Requirement (SOR).** An SOR is prepared by CNO. It tells the Chief

Figure 1. System Development Document Flow



[1] EDP are also performed in the material bureaus.



SR-71—The Air Force's new jet underwent its first flight test recently and passed with flying colors. Powered by two Pratt & Whitney J-58 engines, the SR-71 is built by Lockheed for the Strategic Air Command. Its specifications put it well into the Mach-3 class. Although the plane is designed to operate at altitudes over 80,000 feet, its civilian test pilot held the maiden flight to just over 45,000 feet. When produced, this long-range strategic reconnaissance plane will take its place at Beale AFB, Calif.

of Naval Material (CNM) of the need to develop a particular operational capability. The SOR is the final stage in requirements documentation and normally marks the transition from research to systems development.

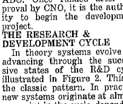
• **Technical Development Plan (TDP).** A TDP is prepared by the Principal Development Activity. It is the plan for fulfilling the requirement of the SOR or ADO. Once funded after approval by CNO, it is the authority to begin the development project.

THE RESEARCH & DEVELOPMENT CYCLE

In theory systems evolve by advancing through the successive states of the R&D cycle illustrated in Figure 2. This is the classic pattern. In practice new systems originate at almost any point in the cycle, depending upon earlier research and exploratory development and relative military importance.

The following are brief descriptions of the stages in the R&D cycle.

Figure 2. The R&D Cycle



• **Research** is in the realm of ideas and theory. If it aims to increase man's knowledge of natural phenomena and environment by exploration in the physical, behavioral, and social sciences, mathematics, and medicine it is **basic research.** If it is in support of a fleet need it is applied research.

• **Exploratory development** concentrates on solving specific military problems, and on determining the feasibility of the military application of the ideas, conceptions, inventions, innovations, breakthroughs, etc. that evolve from all research in and out of the Navy, contracted or independent.

• **Advanced development** concentrates on the development of hardware for experimental or operational test as opposed to projects for items designed and engineered for eventual service use. Projects in this stage represent a deliberate assault on the boundaries of the state-of-the-art.

• **Engineering development** is the state in which a complete set of hardware is produced, suitable for both operational testing and to serve as a prototype for further production. Included are those development programs being engineered for service use but which have not yet been approved for procurement or operation.

• **Operational systems development** is the stage in which the R&D effort moves into the development, engineering and test of systems, support programs, vehicles and weapons that have been approved for production and service employment. The key difference between engineering development and operational systems development is that the latter has been approved for production and procurement.

THE USER-PRODUCER DIALOGUE

So far the focus has been on documents and the stages of the R&D cycle. Both of these play a major part in the dialogue between the user and producer interests of the Navy. This dialogue proceeds generally as follows:

The user, CNO, expresses fleet needs to the producer, CNM. CNM in response advises CNO of the technical feasibility of producing what is needed, the possible approaches, the economic considerations in the production of needed items, and the time scales on which they might be developed and produced.

CNO selects the approach to be taken and so informs CNM, who performs the work. At appropriate times both CNO and CNM appraise what is being done—CNO for the military worth of the system being produced and CNM in terms of utilization of resources and efficiency of production or development.

In the context of this user-producer dialogue a project would advance through the successive R&D cycle stages in the following manner (see Figures 1 and 2):

(Cont. on page 8)

Defense Atomic Support Agency Streamlined For Greater Efficiency

The Defense Atomic Support Agency (DASA), with roots in World War II's historic Manhattan Project, has been reorganized. The Office of the Secretary of Defense, in making this announcement recently, pointed out that reorganization resulted from studies launched in 1962 by the Office of the Director, Organizational and Management Planning.

It is expected that reorienting DASA's internal and external relationships will help it achieve full effectiveness in its primary mission of providing support to the defense establishment wherever nuclear weapons, including their effects and testing, are concerned.

As a Defense Department agency, DASA is jointly staffed. The Director, Deputy Director (Operations & Administration) and Deputy Director/Commander, Field Command, generally come from the three Military Services; a third Deputy Director (Scientific) is a civilian scientist.

Most DASA Headquarters functions are carried out in its Pentagon offices. One important element, however, is located, along with the important DASA Field Command, in New Mexico at Sandia Base, near Albuquerque. This is the Weapons Test Division.

Formerly Armed Forces Special Weapons Project

Following World War II, the Manhattan Project was disestablished by the Atomic Energy Act of 1946. In its place two agencies were created. One, the Atomic Energy Commission (AEC), inherited responsibility for research, production and control. The second, the Armed Forces Special Weapons Project (AFSWP), was built around a nucleus of erstwhile Manhattan Project military personnel. Its mission was "to furnish support to the Army, Navy and Air Force in the field of atomic weapons by providing technical, logistic and training services."

In 1959, following the President's Reorganization Act of 1958, the AFSWP was renamed the Defense Atomic Support Agency. Apart from the change of name, however, the organization's structure remained vir-

(*Cont. on page 12*)

Defense Contract Administration To Administer Industrial Security

Responsibility for the administration of the Department of Defense Industrial Security Program, operating in over 25,000 United States industrial, educational and research facilities, is to be transferred shortly from the Departments of the Army, Navy and Air Force to the Defense Contract Administration Services (DCAS) of the Defense Supply Agency.

The program, which has been in operation since 1951 under the administration of the three Military Departments, is one of several functions relating to defense contracting for which the newly established DCAS will assume responsibility. Security cognizance over individual facilities will be shifted gradually to the new activity.

In this connection, a new revision to the Industrial Security Manual for Safeguarding Classified Information (Attachment to DD Form 441) will become effective on March 22, 1965. This manual establishes uniform security practices within industrial plants or educational institutions and all organizations and facilities used by prime and subcontractors having in their custody classified information of the Defense Department, certain other Executive Departments and agencies, or certain foreign governments.

Distribution of the revised manual to all defense contractors will be made by the cognizant defense security offices beginning in February. Additional copies may be purchased at the Government Printing Office, Washington, D.C., after March 22. GPO has not yet announced the price of the publication.

The preparation and publication of this manual and other regulations on industrial security, previously discharged by the Office of the Deputy Assistant Secretary of Defense (Security Policy), will in the future be the responsibility of DCAS. However, responsibility for the formulation of industrial security policy will be retained by the Deputy Assistant Secretary of Defense (Security Policy).

Active U.S. Role in 1965 Paris Air Show Announced by DOD

The Department of Defense, working with other Government agencies, is planning for a more active role of the U.S. Government in the 1965 Paris Air Show to be held at LeBourget Airport, June 11-20. DOD will support and assist aerospace industries who plan to participate in this event.

According to Mr. Henry J. Kuss, Jr., Deputy Assistant Secretary of Defense (International Logistics Negotiations), the purpose of U.S. participation is to (1) promote foreign sales of U.S. aerospace products and services; (2) to manifest U.S. defense capability and contributions to maintenance of world peace; (3) to project an image of the U.S. as the world leader in aerospace research, development, and production; (4) to demonstrate achievements; and (5) to provide an official U.S. presence identified with commercial U.S. activities.

Mr. Kuss points out that all firms planning to participate should initiate their applications for export licenses, bailment of equipment and clearance of technical data at the earliest possible date to insure completion by Air Show time. All communications with Government agencies should be clearly marked "Paris Air Show" so that the proper individual in each case will be alerted.

The Secretary of Defense, in cooperation with the Department of Commerce, has approved DOD support for a Business Information Center (BIC) to assist promoting foreign sales of U.S. products and services. The BIC will be the focal point of all official U.S. activities. It will be equipped with conference rooms, a technical library and a small theater geared to support U.S. industry. It will also house a Joint U.S. Information Center (JUSIC) consisting of representatives from Defense, Commerce, USIA, a Commerce-contracted public relations firm and technical advisers from industrial associations.

The following two lists indicate the military aircraft scheduled to be shown in the Air Show and designated Air Show contacts. Plans for inclusion of other military aircraft are under consideration.

U.S. Military Aircraft To Be Shown In Paris Air Show

Army

OV-1B Mohawk
UH-1B Iroquois
CH-37B Mojave
OH-13H Sioux
CH-47A Chinook
LOH (Availability at Air Show time has not yet been determined.)
XV-5A (Fan in Wing, General Electric-Ryan. Status of the program at time of Air Show will determine its availability.)

Navy

(Flyovers by four of the following Sixth Fleet aircraft and a static display of an additional one each throughout the Show.)
RA-5C Vigilante
A-6A Intruder
A-4C Skyhawk
F-4B Phantom II
Based on availability, to be determined early in 1965, flyover and/or static display of the following aircraft:
P-3A Orion
E-2A Hawkeye
Trans-Atlantic flight and static display of one of the following helicopters (to be announced later):
CH-53A Sea Stallion
YH-40A Sea Knight
16 H Ringtail Aircraft
Demonstrations by the "Blue Angels" in F-11A aircraft.

Air Force

C-141 Starlift (with 463L demonstration of Army mobile hospital)
C-130 Hercules
F-5A/B Freedom Fighter
Aircraft planned for static display:
RF-101 Voodoo
F-102 Delta Dagger
F-105 Thunderchief
KC-135 Stratotanker
C-140 Jetstar
T-39 Sabreliner
H-43B
Demonstrations by the USAF "Thunderbirds" in F-100 aircraft.
Plans for inclusion of other military aircraft are under consideration on which decisions are not yet resolved.

Designated Contacts

Department of Defense

Maj. Ronald H. Everett
Office of Asst. Secretary of Defense (Public Affairs)
Room 2E733, The Pentagon
Washington, D.C. 20301
Telephone: Area Code 202, OXford 5-6795

Army

Lt. Col. Thomas E. Thompson
Office of Chief of Information
Room 2E641, The Pentagon
Washington, D.C. 20310
Telephone: Area Code 202, OXford 7-7550

Navy

Capt. George F. Rodgers
Office of Chief of Naval Operations
OP-05A6, Room 4E409, The Pentagon
Washington, D.C. 20350
Telephone: Area Code 202, OXford 7-5973

Air Force

Maj. William J. D. Taylor
Office of Director of Information
Room 4C873, The Pentagon
Washington, D.C. 20330
Telephone: Area Code 202, OXford 7-5220

Department of State

Mr. Ralph H. Cadeaux
Office of Munitions Control
1711 New York Avenue NW
Washington, D.C. 20520
Telephone: Area Code 202, DUpont 3-4621

Department of Commerce

Mr. W. Bradlee Smith
Bureau of International Commerce
Office of International Trade Promotion
Room 6823, Main Commerce Building
Washington, D.C. 20230
Telephone: Area Code 202, WOodley 7-3170

U. S. Government Coordinator in Paris

Mr. Roe Preston
Special Assistant to the Ambassador
American Embassy
Paris, France
Telephone: ANjou 7460

ABOUT PEOPLE

DEPARTMENT OF DEFENSE

William B. Petty has been named Director, and Edward T. Cook the Dep. Director of the recently established Defense Contract Audit Agency. Mr. Petty was formerly Dep. Comptroller of the Air Force and Mr. Cook was Navy Director of Contract Audit.

Townsend W. Hoopes, formerly a partner in the New York management consultant firm of Cresap, McCormack and Paget, has been appointed Dep. Asst. Secretary of Defense for Near East, South Asia Affairs and MAP Policy Review in the Office of the Asst. Secretary of Defense (International Security Affairs).

Capt. Fredric D. Bardshar, USN (RAdm. selectee), has been appointed Chief, Requirements & Development Div., Office of Joint Chiefs of Staff, Washington, D.C.

Maj. Gen. George P. Sampson, USA, Dep. Director, Defense Communications System, Defense Communications Agency, retired on January 31 after more than 35 years active military duty. While Gen. Sampson's contributions to military communications-electronics have been numerous and far-reaching, he is perhaps best known for his work in finalizing the many technical difficulties associated with the inception of the now existing "Hot Line" between Moscow and Washington. He was the technical negotiator at the Geneva conference which approved this important direct communications system and, for this outstanding public service, was chosen the 1964 recipient of the Dubois Medal. Gen. Sampson will be replaced by Maj. Gen. George E. Pickett, USA, presently Dir. of Officer Personnel, in the Army Office of Personnel Operations.

ARMY

Gen. Paul L. Freeman has been named Commanding General, U.S. Continental Army Command, replacing Gen. Hugh P. Harris who is retiring.

Gen. Andrew P. O'Meara, currently Commander in Chief, Caribbean Command, will replace Gen. Freeman as Chief, U.S. Army Europe, and Commander of the Central Army Group of the North Atlantic Treaty Organization.

NAVY

The President has announced the appointment of Kenneth E. BeLieu as Under Secretary of the Navy and Graeme C. Bannerman as Asst. Secretary of the Navy (Installations & Logistics).

Mr. BeLieu was formerly the Asst. Secretary of the Navy (Installations & Logistics), a position he has held since Feb. 7, 1961. Mr. Bannerman was formerly Dep. Asst. Secretary of Defense (Procurement), a position he has occupied since Feb. 1961.

The Navy has announced the following flag officer changes: VAdm. John S. Thach, Dep. Chief of Naval Operations (Air), was nominated for promotion to rank of Admiral and designated to succeed Adm. Charles D. Griffin as Commander, U.S. Naval Forces Europe. Adm. Griffin will replace Adm. James S. Russell, who will retire on April 1, as Commander in Chief, Allied Forces, Southern Europe. VAdm. Paul H. Ramsey, Commander, Naval Air Force Atlantic Fleet, will become Dep. Chief of Naval Operations (Air).

VAdm. William A. Schoech, Chief of Naval Material, will retire on March 1. RAdm. I. J. Galantin, nominated for rank of Vice Admiral, has been designated to succeed VAdm. Schoech.

The Chief of Naval Material has established two Assistant Chief of Naval Material positions to clarify responsibilities and improve coordination of the procurement and logistics functions of the Deputy Chief of Naval Material (Materials & Facilities). Appointed to the new positions are: Capt. Joseph L. Howard, Asst. Chief of Naval Material (Procurement), who is responsible for developing and promulgating policies and methods of procurement, contracting, contract administration, and contractor performance for material and services throughout the Navy Department; and Capt. John B. Ritch, Jr., Asst. Chief of Naval Material (Logistic Support), who is responsible for developing and coordinating policies and programs within the Naval Material Support Establishment (NMSE) which relate to maintenance and supply management, standardization, quality control, value engineering and engineering support, and all facets of real estate and facilities.

AIR FORCE

Gen. John Paul McConnell, a veteran of more than 32 years of commissioned service, has succeeded Gen. Curtis E. LeMay as Chief of Staff, U.S. Air Force. Gen. LeMay retired on Feb. 1.

Gen. McConnell has been Air Force Vice Chief of Staff since Aug. 1, 1964, having been named to that post while Deputy Commander-in-Chief, U. S. European Command, an assignment he had filled since October 1962.

A native of Booneville, Ark., Gen. McConnell was graduated from the U. S. Military Academy in 1932 and received his wings at Kelly Field, Tex., in 1933.

A veteran of more than 11 years with the Strategic Air Command, Gen. McConnell has served in Air Force assignments in both Europe and Asia. As a pursuit pilot during his early Army Air Corps career, he moved through observation operations, bombers and training duties, with World War II service in Washington, China-Burma-India Theater of Operations and the Southeast Air Command.

Among his decorations are the Distinguished Service Medal, Legion of Merit with three Oak Leaf Clusters and the Distinguished Flying Cross.

Lt. Gen. W. H. Blanchard has been nominated for promotion to rank of general and reassignment from Dep. Chief of Staff, Plans & Operations, to Vice Chief of Staff.

The following general officers have been nominated for promotion to rank of lieutenant general in the positions indicated: Maj. Gen. J. V. Edmundson in his present position as Dir. of Inspection Services, Office of Asst. Secretary of Defense (Admin.); Maj. Gen. W. K. Martin reassigned from Asst. Vice Chief of Staff to The Inspector General; and Maj. Gen. R. J. Friedman reassigned from Asst. Dep. Chief of Staff, Programs & Requirements, to Dep. Chief of Staff, Programs & Requirements. Also approved for reassignment were the following: Lt. Gen. K. K. Compton from The Inspector General to Dep. Chief of Staff, Plans & Operations, and Lt. Gen. H. T. Wheless from Dep. Chief of Staff, Programs & Requirements, to Asst. Vice Chief of Staff.

Recent assignments to Hq USAF are: Maj. Gen. Seth J. McKee as Director of Plans, Office of Dep. Chief of Staff, Plans & Operations; Brig. Gen. Robert L. Petit as Dep. Dir. of Operational Requirements for Weapons Effect Testing, Office of Dep. Chief of Staff, Programs & Requirements; and Col. John French, as Dep. Dir. of Budget, Office of Comptroller of the Air Force.

Brig. Gen. Olbert F. Lassiter, Dep. Dir. of Operations for Strategic/Defense Forces, Office of Dep. Chief of Staff, Plans & Operations, Hq USAF, has retired. His replacement is Brig. Gen. Woodrow P. Swancutt.

The new Deputy for Reconnaissance at Headquarters, Aeronautical Systems Division, Air Force Systems Command, is Brig. Gen. William R. Yancey.

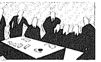
Brig. Gen. William G. Lee, Jr., will assume duty as Dir. of Plans and Program at Headquarters, Air Force Logistics Command, on March 1.

Maj. Gen. C. B. Root, formerly commander of Rome Air Materiel Area, Griffis AFB, N. Y., has assumed command of Mobile Air Materiel Area, Brookley AFB, Ala. He replaces Maj. E. B. Cassady, who retired from active duty on Jan. 31. Replacing Gen. Root as commander of Rome Air Materiel Area is Col. George E. Harrington, who previously served as deputy commander of Rome AMA.

U. S. Army Materiel Command Project Managers

PROJECT	PROJECT MANAGER	LOCATION	PHONE
ADVANCED AERIAL FIRE SUPPORT SYSTEM	Col. L. W. Leeney	Bldg. T-7 Rm 2072	OX 5384
AIRCRAFT WEAPONIZATION (XM-1, XM-2, XM-3, XM-5, XM-6, XM-22)	Col. N. L. Lindstrand, Jr.	Bldg. T-7 Rm G-429	OX 5511
CV-7A	Col. V. J. Layton	Bldg. T-7 Rm 2810	OX 7207
CHINOOK	Col. E. B. Bissell	Bldg. T-7 Rm 1704	OX 5511
FLATTOP	Lt. Col. J. F. Sullivan	Bldg. T-7 Rm G-814	OX 7746
INTERIM AIR DEFENSE SYSTEM	Col. E. P. Curtis	Bldg. T-7 Rm 2717	OX 7817
IROQUOIS (UH-1, HU-1)	Col. M. J. Krisman	Bldg. T-7 Rm 1543	OX 5489
LOH (OH-4, OH-5, OH-6)	Col. J. L. Gude	Bldg. T-7 Rm 2546	OX 72461
MAIN BATTLE TANK	Maj. Gen. W. G. Dolvin	Bldg. T-7 Rm 2537	OX 58724
MOHAWK (OV-1A, 1B, 1C)	Lt. Col. V. L. Ulery	Bldg. T-7 Rm G-443	OX 7668
SPECIAL WARFARE	Col. R. R. Lutz	Bldg. T-7 Rm 1056	OX 77010
M113 ITALY CO-PRODUCTION	Lt. Col. F. E. Abrino	Bldg. T-7 Rm 2533	OX 59009
(THE ABOVE OFFICES ARE LOCATED IN WASHINGTON, D. C.)			
CCIS-70	Col. G. P. Lerner	1925 N. Lynn St. Arlington, Va.	OX 4460
DESERET	Brig. Gen. J. A. Hebbeler	Deseret Test Center, Ft Douglas, Utah	355-061 X-211
SATCOM	Brig. Gen. J. W. Johnston	USA Satellite Communications Agency, Ft Monmouth, N.J.	532-900 2-122
NIKE-X	Col. I. O. Drewry	Missile Command, Huntsville, Ala.	870-210 427
HAWK	Col. G. McBride	Missile Command, Huntsville, Ala.	876-210 560
HERCULES	Col. R. M. Colquitt, Jr.	Missile Command, Huntsville, Ala.	876-210 481
LANCE	Lt. Col. W. E. Mehlinger	Missile Command, Huntsville, Ala.	876-210 614
MAULER	Col. B. R. Luczak	Missile Command, Huntsville, Ala.	876-210 820
PERSHING	Col. E. I. Donley	Missile Command, Huntsville, Ala.	876-210 116
REDEYE	Col. A. W. Reed	Missile Command, Huntsville, Ala.	876-210 132
SERGEANT	Col. J. M. Loomis, Jr.	Missile Command, Huntsville, Ala.	876-210 611

(Cont. on page 14)



MEETINGS AND SYMPOSIA

March 1965

International Symposium on CHEMILUMINESCENCE, March 30—April 2, at Army Research Office, Durham, N. C. Sponsor: Office of Naval Research. For information contact: Mr. Harry Fleisher, Office of Naval Research, Washington, D. C., telephone OXford 6-1854. UNCLASSIFIED.

April 1965

Symposium in APPLIED MATHEMATICS ON MAGNETO-FLUID AND PLASMA DYNAMICS, April 12-15, at Waldorf-Astoria Hotel, New York, N. Y. Sponsors: Air Force Office of Scientific Research and Army Research Office, Durham, N. C. For information contact: Capt. J. Jones, Jr., Air Force Office of Scientific Research, (SRMA), Washington, D. C., telephone: OXford 6-1302. UNCLASSIFIED.

Fourth Symposium on ADVANCED PROPULSION CONCEPTS, April 26-28, at Palo Alto, Calif. Cosponsors: Air Force Office of Scientific Research and United Aircraft Corporation. For information contact: Maj. C. J. Donovan, Air Force Office of Scientific Research (SREP), Washington, D. C., telephone OXford 6-3742. SECRET.

Aeronautical Systems Seminar Scheduled For Industry, March 23-25

Approximately 150 executives of the aeronautics industry will attend an Air Force-Industry planning seminar on aeronautical systems at Wright-Patterson Air Force Base, Ohio.

The seminar, March 23 to 25, will be keynoted by General Bernard A. Schriever, Commander of the Air Force Systems Command. Major General Charles H. Terhune, Jr., Commander of the Aeronautical Systems Division will be host.

A classified meeting, the seminar is designed to inform American industry of the Air Force's aeronautical systems future plans and policies, provide a background of planning information to assist industry in formulating its long-range corporate objectives, and to review with industry its assessment of its needs for long-range planning information.

The program will include briefings by the Department of Defense, Air Force, Air Force Systems Command, Aeronautical Systems Division, Research & Technology Division, and Aerospace Medical Division. The sessions will conclude with a panel assessment and recommendations. Representatives from all Military Services, National Aeronautics & Space Administration, and other government agencies have been invited to participate.

Chairman of the Assessment panel will be Colonel M. A. Cristadoro, Jr., Deputy for Advanced Systems Planning, Aeronautical Systems Division. The general chairman of the seminar is Kenton W. Zahrt, Assistant for Innovation to Colonel Cristadoro.

Because the classified meeting facilities will limit the number of attendees, the results of the seminar will be published and made available to the entire industry on a need-to-know basis. Zahrt stated that the companies selected provide a representation of all segments of the aeronautics industry including major contractors, small businesses, and not-for-profit research organizations.

In making up the invitation list, attention also was paid to assuring that a cross-section of Air Force contractors was included, such as airframe manufacturers, propulsion, electronics, chemical and others.

The seminar, one of a number directed by the Department of Defense, will follow a format outlined by Alexander H. Flax, Assistant Secretary of the Air Force for Research & Development. "These seminars," he said, "will last from three to five days with panels preparing plans covering specific areas of interest and developing recommendations for the Air Force and industry to follow in the planning process."

Uniform Guidance On Security Classification Issued

A new comprehensive instruction issued by the Department of Defense (DOD Instruction 5210.47) will provide in one package uniform guidance, standards, criteria and procedures for security classification of official information.

The instruction applies throughout the DOD and also will provide the basis for classification activities in defense industry.

With the ultimate aim of reducing the quantity of classified material and thereby facilitating the flow of scientific and technical information into non-defense activities, the instruction provides (1) that the signer or final approver of a document is responsible for necessity, accuracy and currency of the classification assigned; (2) that, with respect to material other than documentation, the supervisor at the lowest operational level at which material is produced is responsible for the necessity, accuracy, and currency of the classification assigned; and (3) that systems be established which, without undue delay and in the normal course of business, will provide for reviews of the classification assigned.

Also of interest to industry is the emphasis which is placed on the necessity for detailed guidance for all programs and projects, identifying precisely the information which is determined to warrant security

(*Cont. on page 16*)

BIBLIOGRAPHY

The following publications released by the Defense Department and its component agencies may be of interest to the defense industry:

DOD Instruction 5210.47, "Security Classification of Official Information," Dec. 31, 1964. Provides guidance, policies, standards, criteria and procedures for the security classification of official information under the provisions of Executive Order 10501, as amended, for uniform application throughout the DOD, the components of which, in turn, through their implementation of this instruction, shall accomplish its application to defense contractors, sub-contractors, potential contractors, and grantees. Determinations whether particular information is or is not Restricted Data are not within the scope of this instruction.

DOD Directive 1442.4, "Procurement of Temporary and Intermittent Services of Experts and Consultants," Jan. 11, 1965. Prescribes general regulations governing the employment of individual experts, consultants, and part-time advisory personnel in the DOD, including the procurement of individual services by contract.

DOD Instruction 7720.12, "Defense Contractor Cost Reduction Program," Jan. 18, 1965. Describes procedures and format for reporting and validating the cost reduction achievements of contractors participating in the Defense Cost Reduction Program. It explains how a DOD Cost Reduction Monitor will conduct a qualitative review of a contractor's program, how a validation report will be processed to a central data bank, and how the information will be used.

DOD directives and instructions may be obtained from:
Publications Distribution Branch
Office of the Secretary of Defense
Room 3B938, The Pentagon
Washington, D. C. 20301

Defense Procurement Circular No. 20, Dec. 18, 1964. Amendment of DPC No. 6—Rights in Technical and Other Data and Copyrights; Extension of Mandatory Date of Standard Forms; and Equal Opportunity.

Defense Procurement Circular No. 21, Dec. 28, 1964. Clarification of Project Definition Phase (PDP) Regarding Technological Advancement and Specifications; Dissemination and Effective Dates of the ASPR, Its Revisions, and the Defense Procurement Circulars; and Conforming Definition in Special Test Equipment Clause in ASPR Paragraph 13-705 to Corresponding Paragraph 13-101.6.

Each Defense Procurement Circular (DPC) is designed to place new or changed policies or procedures in effect prior to publication of an Armed Services Procurement Regulation (ASPR) revision. The items in each circular are canceled after six months, unless specifically eliminated earlier by a new DPC or by publication in the ASPR. ASPR subscribers will receive Defense Procurement Circulars through the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

U. S. Air Force Office of Aerospace Research (OAR) Quarterly Index of Current Research Results, July 1–Sept. 30, 1964. Designed to (1) identify all technical reports produced and published by various OAR organizations during quarter indicated; (2) provide record of results of research conducted and sponsored by each OAR organization; and (3) furnish a ready reference for identification of technical reports produced by particular authors or contractors, under certain contracts, grants or projects.

Author's Guide for Technical Reporting (OAR 64-8), July 1964. Presents simple rules and suggestions for authors of OAR-sponsored scientific reports. Its contents are consistent with the majority of guides used by professional journals and with current rules and directives of DOD and U. S. Air Force.

U. S. Air Force Office of Aerospace Research 1964 Annual Report (OAR 64-15).

U. S. Air Force Achievements in Research. A presentation of one hundred accomplishments selected to reflect the scope and quality of the OAR research program.

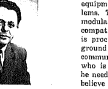
Agencies of the DOD, qualified contractors and other government agencies may obtain copies of the OAR publications listed above from:
Defense Documentation Center
Cameron Station
Arlington, Va. 22314

United States Army in World War II, Special Studies, Buying Aircraft: Materiel Procurement for the Army Air Forces. The book offers the reader a liberal education in military procurement as it was practiced between the two World Wars and during World War II. Because this volume offers concrete examples of problems involved in design and purchase of complicated items of military equipment, it should prove useful for those currently engaged in procurement of missiles and aircraft as well as to students of logistics.
Catalog No. D 114.7:Ai7 Cloth, $4.75

The New Four Ocean Challenge. Describes the four ocean challenges of the future and how we should prepare to meet them. Tells about the responsibilities of our Navy and Marine Corps in war or peace.
Catalog No. D 201.2:Oc 2 35¢

Publications that require remittance are available for purchase at U. S. Government Printing Office, Washington, D. C.

FROM THE SPEAKERS ROSTRUM



Honorable Eugene G. Fubini

Excerpt from address by Hon. Eugene G. Fubini, Asst. Secretary of Defense (Dep. Dir., Defense Research & Engineering), before a Meeting of the Association of the U.S. Army.

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Trends in Defense Research & Development

One of the missions of my office, as I see it, is to bring harmony to the requirements established by the Services, and to the development and procurement of equipment and weapons to meet these requirements. This has to be done without changing the character of the Service, without destroying its esprit, its traditions, and its personality which are so important. But it must be done so that a man in one airplane can recognize and talk to a compatriot in another, so that the ammunition provided to a Marine will fit the rifle of an Army man who is fighting in the same Unified Command or Joint Task Force, so that the radios of the Marines are compatible with those of the Army units on their flanks.

It is also easy to see that it is not an easy task to convince enthusiastic supporters in each Service that a single type of equipment will meet their requirements and that three different types are not necessary. But the job must be done. For example, the Army, the Marines, and the Air each have different systems for ntrol of aircraft in the tactical ifference

Force aircraft. Thus, differences in equipment intensify doctrinal problems. The Marines want a type of modulation in the VHF that is not compatible with the radios the Army is procuring. The Army man on the ground cannot use his own radio to communicate with the Air Force man who is providing him close support; he needs an Air Force radio. I cannot believe that anyone would disagree about the need for a change: we must promote useful duplication in development but we must prevent it in procurement. The magnific fighting spirit of the Marines should not be influenced by a decision that their VHF radios should use the same modulation that the Army uses. It seems to me that it makes as little sense to have two different types of hardware to do air traffic control in the battlefield as it would to create two separate FAA's, one for a propeller driven aircraft and one for jets.

Still, our decisions are seldom popular. Often members of the Army ask themselves how we can disapprove a proposal the merits of which are so obvious. The fact of the matter is that in many cases they have not looked around at the Navy and the Air Force; but we must look. The dialogue between the Services and our offices has been slow in getting established but is now going on with intensity and continuity.

One of the purposes of this short talk is to promote the dialogue, to explain our motives, to promote communication and exchange of ideas.

The Services are the source of our strength but, since a centralizing group is unavoidable, we must establish a climate where we can trust and are trusted. We must try not to justify mistrust; we must recognize that honest disagreements are unavoidable but it is necessary that on both sides the climate of trust be promoted . . .

New Technologies Create Problems

Now let me talk a moment about a problem that we engineers have ated for ourselves. In the early years of World War II and right after its end, the scientists and engineers had a difficult time convincing the operators that the new technologies had much to offer. Thus the engineers established a nonorganized, albeit very effective, sales campaign. They were successful, very successful, too successful. The number of vacuum tubes or of transistors in a system, once counted in the hundreds, climbed to the thousands, and is now in the millions, the tens of millions.

Looking over what we have created many of us have become very apprehensive about the creature we generated. And we are reversing the trend. I invented the American Syndrome joke that says, "If you can do it, do it; it does not matter if it is really not necessary, if it costs a lot, takes a long time to build, weighs too much, if it can be done we should do it." If one asks: Why did you specify 3000 miles as the range of your satellite detector radar and not say 4000 miles or 2000; the answer is certain: We specified 3000 miles because we thought that the state-of-the-art permits it. It must be obvious to you why we engineers should worry; if we build at the extremes of our capability we will not have practical solutions.

And thus we have another reason for concern. We have convinced the operational people so well that in many cases we must say:

Please take it easy: if your air defense tactical sector is designed this way it will require ten million transistors or diodes; it may well work, but if each transistor lives 100 years or about a million hours there will be a failure in average every few minutes. Of course the design can be modified to increase the reliability but this serves to increase the complications. Unfortunately our colleagues in the contractors' plants do not assist us too much in this trend and so we are beginning to see a problem in which the situation of earlier years is reversed. The government technologists are the conservative ones, the military are the bold ones. Let me use this platform to issue a plea: remember that the very best, even if feasible, will not stay feased.

The second best will cost too much, take too long, require too much logistic support.

Take the third best; it will work and keep working.

And to the operational people, we ask for understanding and help to prevent project terminations and delays; our worry is not about the cost of the termination but the fact that any false start continues a military situation where our forces instead of being equipped with the first or second best remain equipped with the last worst . . . .

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Gen. Earle G. Wheeler, USA

Excerpt from an address by Gen. Earle G. Wheeler, USA, Chairman, Joint Chiefs of Staff, at Annual Printing Week Banquet, Philadelphia, Pa.

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Planning and Controlling Major Defense Programs

The heart of the defense cost analysis system is comparison—evaluating the costs of goods and services bought with the results achieved in terms of military effectiveness. Although intangibles and difficult judgements are usually involved as well as hard facts, this analytical process assists materially in determining if the expense involved is worthwhile. The hunch bettor on a horse race is a rare winner; the careful, objective analyst has a better chance of making a few dollars. The surest way to lose is to bet on every entry. In the field of defense we have many projects and systems demanding support. By analysis, we try to eliminate those of least promise of being winners . . . .

(Our Five-Year Force Structure and Financial Program) comprises a comprehensive system for planning and controlling major defense programs at the highest levels. It also permits an orderly transition from one stage of a program to the next so that "wheel spinning" is held to a minimum.

The program accomplishes these objectives because it is mission-oriented rather than being based on the desires of a particular Service. By that I mean that it breaks out the military force structure—that is, the numbers of troops, where they are deployed, and the types of individuals and equipment involved—into categories based on mission; for example, Strategic Retaliatory Forces, Continental Air and Missile Defense Forces, General Purpose Forces, Airlift and Sealift Forces, and so forth. This is much more meaningful in this era when any sizable conflict will require the integrated employment of forces of all services—land, air and sea—than using such categories as Army Forces, Navy Forces, Air Force Forces, and Marine Corps Forces as we did in the fairly recent past. Within these mission categories, it provides for complete packages of forces—multiservice, if appropriate—to do particular jobs.

The program also deals with the input of resources—manpower, equipment, and installations, together with their costs—and relates them to the outputs or the end products—such as Strategic Retaliatory Forces—so that a certain input will provide a certain output.

The program also coordinates long-range military planning with short-range detailed budgeting by projecting the detailed programs five years into the future. Finally, it provides for a continuing appraisal and control of the progress of individual projects through a system of progress reporting, and it furnishes physical and financial data in forms suitable for making cost effectiveness studies of alternative courses of action.

In fact, the system is the only one which ties all facets of the defense effort together. It does this by relating national security objectives to strategy, then tying strategy to the forces required, forces to resources, and resources to costs—all within the same conceptual framework and all projected several years into the future. You might say that it provides the decision maker with the great advantage of permitting him to see how big a poker game he is getting into before he buys his first stack of chips.

* * * * * * * * * *

New High-Thrust Test Facility

A new capability for test firing advanced rocket propulsion systems—with increased efficiency — was recently announced by the Air Force Systems Command's Research & Technology Division (RTD). The new test capability is being added to RTD's Air Force Rocket Propulsion Laboratory with the current construction of an $8 million rocket test stand at Edwards Air Force Base, Calif.

The test stand, with unusually flexible features, differs from other test stands in that it is designed to test fire large solid rocket motors in either vertical or horizontal positions. Liquid rocket engines can also be fired from a horizontal position. The test stand's instrumentation system incorporates features which make it adaptable to a wide range of tests.

The installation's interchangeable features were designed to cut costs and still provide a wide range of testing capabilities within a single facility. It includes dual-purpose vessels which can handle either cryogenic or storable rocket propellants.

New Naval District Established

Effective January 1, 1965, the Potomac River and Severn River Naval Commands were merged and became the Naval District Washington (NDW). No changes or reduction in personnel, military or civilian, are contemplated.

Geographically the consolidation means that the Potomac River Naval Command, with headquarters in the Washington Navy Yard, will be expanded to include Anne Arundel County, Md., once the boundaries of the Severn River Naval Command.

The Commandant of Naval District Washington, D. C., is Rear Admiral Andrew J. Hill, USN, past Commandant, Potomac River Naval Command.

Within the NDW are some of the Navy's largest research and development centers, including the Naval Research Laboratory, which pioneered the development of radar; the David Taylor Model Basin, which is the world's largest facility for testing ship and aircraft design; th tional Naval Medical Center,

(*Cont. on page 14*)

Atomic Support Agency

(*Cont. from page 3*)

tually unchanged until July 1, 1964.

Central Coordinator For Nuclear Weaponry

Under the military command of the Secretary of Defense, the DASA coordinates DOD nuclear weapons programs at the national level. This responsibility includes the maintaining of close liaison with the AEC, the military and other governmental agencies concerned with nuclear weapons. Additional field and laboratory activities are conducted through three major subordinate commanders.

The largest of these elements, Field Command, DASA, is the agency's primary operational command, with headquarters at Sandia Base. Presiding over the Field Command is a Deputy Director of DASA. Directly under him are two Assistant Deputies, one for Weapons and Training, the second for Support. Also under Field Command supervision are the National Stockpile Sites, scattered through the country.

Another arm of DASA is Joint Task Force EIGHT (JTF 8), staffed by the three Services. Operating under DASA control, JTF 8 will plan and conduct overseas nuclear tests, if and when such tests are required and authorized. In this event, operational control will pass from DASA to the Joint Chiefs of Staff, with the Commander of JTF 8 being designated as senior AEC representative in the test area.

The third major subordinate element of DASA is the Armed Forces Radiobiology Research Institute. This nuclear reactor facility in Bethesda, Md., conducts advanced study and research on biomedical effects of radiation.

Weapons Development: A Major DASA Function

In pursuing its primary mission, DASA supports the Secretary of Defense, Joint Chiefs of Staff, Defense Department components and the Military Services in all matters concerning nuclear weapons, including their planning and development

High on the list of these functions is that of reporting on the status of weapons development, production, modifications, stockpiling and retirement to the Department of Defense and the Joint Chiefs. DASA also advises on the preparation of long-range requirements for weapons, and these reports are later submitted to the AEC for its guidance.

The AEC, in turn, performs the basic research and development of nuclear components, basing its designs on military requirements. DASA, however, determines final military characteristics, taking into consideration the needs of the Services concerned. For the sake of versatility, as many of these varied needs as possible are incorporated into a single weapon.

Following close behind basic weapons development itself, development of safety and security features of these weapons is of paramount concern to DASA. Working with individual Services and the AEC, DASA establishes design requirements for effective safety mechanisms.

Supervision Of Nuclear Efforts Tests

What happens as a result of nuclear explosions is of primary concern to the defense establishment, especially in the preparation of operational plans. DASA, in addition to planning and conducting DOD weapons effects tests, collects, analyzes, evaluates and disseminates the resulting data.

This information is gathered from field testing, theoretical studies, laboratory experiments and simulation. In addition to preparing the basic nuclear weapons effects test program for submission to DOD, DASA also renders technical assistance to the Joint Chiefs in evaluating the test results.

Additional responsibility has been assigned DASA for the operation and security of the National Stockpile Sites, to include advising the individual Services on the construction and operation of their own storage sites. To the commanders of the unified and specified commands, DASA provides basic logistics advice concerning atomic weapons for forces assigned to them.

DASA also insures weapon quality and reliability through the scheduling of modifications, modernization and quality assurance sampling.

Other DASA functions include the preparation and administration of training programs for military and civilian personnel. These vary from less than a day to a two-year technical course leading to a graduate degree. All are designed to assist the Services in nuclear weapons training. Many of these courses are conducted at the agency's Sandia Base facilities. Others are offered by traveling teams that visit overseas commands. The graduate training program is given by the University of Rochester (New York), at the Naval Postgraduate School and at selected DOD and AEC installations.

Personnel Assigned To DASA

Director:
  Lt Gen H. C. Donnelly, USAF
  Executive Officer:
  Col D. G. Williams, USA
  Comptroller:
  Capt J. P. Gore, USN
  Public Information Officer:
  Lt Col J. H. Dickson, Jr., USA
Dep. Director,
  Operations & Administration:
  Brig Gen K. F. Dawalt, USA
  Operations Division:
  Col W. M. Shankle, USAF
  Plans Division:
  Col E. W. Bowen, USA
  Security Division:
  Col N. A. Skinrood, USA
  Logistics Division:
  Col J. E. Minahan, USA
  Requirements Division:
  Col W. K. Benson, USA
  Personnel & Administration:
  Col H. E. Morrill, USAF
Dep. Director, Scientific:
  Dr. T. B. Taylor, Civilian
  Radiation Division:
  Col H. C. Rose, USAF
  Medical Division:
  Col G. E. Hekhuis, USAF
  Blast & Shock Division:
  Col G. E. Hesselbacher, Jr., USA
  Analysis & Programs Division:
  Col C. S. Brice, Jr., USA
  Weapons Test Division (Sandia):
  Col D. I. Prickett, USAF
Dep. Director, Commander,
  Field Command:
  RAdm Ralph C. Johnson
Commander,
  Joint Task Force EIGHT:
  Maj Gen John B. Stevenson, USAF
Director, Armed Forces Radiobiology
  Research Center (AFRRI):
  Col James I. Brennan, USA

S	M	T	W	T	F	S
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14	15	16	17	18	19	20
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28						

FEBRUARY 1965

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21	22	23	24	25	26	27
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MARCH 1965

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APRIL 1965

SPEAKERS CALENDAR

OFFICE OF THE SECRETARY OF DEFENSE

Hon. Eugene G. Fubini, Asst. Secretary of Defense (Dep. Dir. of Research & Engineering), at Aerospace Writers Assn. Meeting, Washington, D.C., Feb. 25.

Mr. Peter Solbert, Dep. Asst. Secretary of Defense (International Security Affairs), at Southern Methodist Univ., Dallas, Tex., Feb. 27.

ARMY

Hon. Willis M. Hawkins, Asst. Secretary of the Army (Research & Development), at Harvard Univ., School of Business Administration, Boston, Mass., March 4.

Maj. Gen. G. V. Underwood, Jr., Chief of Information, Department of the Army, at Assn. of U.S. Army Chapter Meeting, Milwaukee, Wis., March 18; at Forrestal Memorial Dinner, Washington, D.C., March 25, (appearance only); at Advertising Club Luncheon, Louisville, Ky., April 16.

NAVY

VAdm. C. B. Martell, Executive Dir. of Anti-Submarine Warfare Programs, Office of Asst. Chief of Naval Operations (Intelligence), at National Security Industrial Assn. Dinner, Ft. Taylor, Key West, Fla., Feb. 26.

AIR FORCE

Hon. E. M. Zuckert, Secretary of the Air Force, at Industrial Round Table, Washington, D.C., March 3; at Goddard Memorial Dinner, Washington, D.C., March 19, (appearance only).

Hon. L. Marks, Jr., Asst. Secretary of the Air Force (Financial Management), at Economic Society Meeting, Miami, Fla., March 16.

Brig. Gen. H. J. Sands, Jr., Commander, Ballistic Systems Div., AFSC, at Jonathan Club Meeting, Los Angeles, Calif., March 18.

Maj. Gen. B. I. Funk, Commander, Space Systems Div., AFSC, at Chamber of Commerce Meeting, Denver, Colo., March 19.

Gen. J. P. McConnell, Chief of Staff, U.S. Air Force, at Base Anniversary Celebration, Little Rock AFB, Ark., March 21.

Maj. Gen. R. L. Bohannon, The Surgeon General, U.S. Air Force, at Pharmaceutical Wholesalers Meeting, Las Vegas, Nev., March 23.

Maj. Gen. R. E. Ruegg, Asst. Dep. Chief of Staff, Systems & Logistics, Hq USAF, at National Security Industrial Assn. Meeting, Washington, D.C., March 25 (appearance only).

Industry Reviews Stock Numbers Cross-Referencing

Acceptance by defense contractors of invitations to participate in a program to review manufacturers' part numbers that are cross-referenced with Federal Stock Numbers has been gratifying, the Defense Supply Agency (DSA) recently announced. The program is voluntary and on a nonreimbursable basis.

Although the review process by manufacturers is complex and time consuming, the response has thus far been excellent in the number of validated lists of reference numbers received from participating industrial concerns.

Known as Project MAVERIC (Manufacturers' Assistance in Verifying and Editing Reference Indentification for Cataloging), the object of the program is to validate, correct, add or withdraw obsolete manufacturers' numbers from Federal Catalog records, and to eliminate "no-user" and duplicate Federal Stock Numbers from the catalog system.

MAVERIC was originally limited in DSA to participation by the Defense Logistic Services Center, Battle Creek, Mich.; and the Defense Industrial Supply Center, Philadelphia, Pa.; and to 11 manufacturers. Later, the Defense General Supply Center, Richmond, Va.; the Defense Construction Supply Center, Columbus, Ohio; the Defense Electronic Supply Center, Dayton, Ohio; and 13 additional manufacturers became participants.

The project will benefit industry through assurance that its current part numbers are accurately cross-referenced to Federal Stock Numbers.

The government will also benefit in that only validated manufacturers' numbers are in the catalog, plus the fact that a single Federal Stock Number will identify an identical item regardless of the manufacturer. There will also be a greater amount of information available on items which can be interchanged or substituted for each other.

Data System Information Will be Standardized

In an era when the rapid interchange of information is becoming more and more essential, computer installations must be able to "talk" to each other. The defense establishment, with 1,100 computers processing data of various kinds, has recognized this problem and is doing something about it.

Spurred on by Deputy Secretary of Defense Cyrus Vance, a new system of standardized information programming is to be phased into use throughout the defense establishment. Transition will be gradual so as to cause minimum problems, but eventually all DOD-associated computer systems will be programmed by the same coding system. As a result of this common "language," these systems will be able to interchange information and data far faster than at present.

The importance of such an information interchange capability became apparent with the advent of the National Military Command System (NMCS). The NMCS is the command post for the National Command Authorities — the President, Secretary of Defense and Joint Chiefs of Staff—and the focal point for strategic operations. As a result it is called upon to handle data from various world-wide organizations, each with its own system of computer information input coding.

Under these separate systems, for instance, one installation might encode "Air Force" as "J," while another encodes it as "Q." Before there can be any interchange of information between the two computers, such information first must be "translated" from one set of symbols to the other. This is a costly and time-consuming task.

Assistant Secretary of Defense (Comptroller) Charles J. Hitch has been assigned responsibility for implementing this program.

New Navy District

(*Cont. from page 11*)

provides the most progressive medical facilities in the Navy; the Naval Air Test Center, Patuxent River, Md., which tests Navy planes before they are accepted for Navy-wide use; the U. S. Naval Weapons Laboratory; and the U. S. Naval Space Surveillance System at Dahlgren, Va.

Army Project Officers

(*Cont. from page 6*)

SHILLELAGH	Lt. Col. R. M. Pearce	Missile Command, Huntsville, Ala.	876-2101 8171
TOW	Lt. Col. B. B. Small, Jr.	Missile Command, Huntsville, Ala.	876-2101 6185
AACOMS	Lt. Col. H. W. Runft (Acting)	Electronics Command, Ft Monmouth, N. J.	532-9000 5-2853
AN/VRC-12 AN/PRC-25	Col. J. Schofield	Electronics Command, Ft Monmouth, N. J.	532-9000 5-2249
MQM-58A	Col. D. P. Gallagher	Electronics Command, Ft Monmouth, N. J.	532-9000 5-1926
RADAS	Col. D. R. Guy	Electronics Command, Ft Monmouth, N. J.	532-9000 5-2348
UNICOM/STARCOM	Col. H. F. Foster, Jr.	Electronics Command, Ft Monmouth, N. J.	532-9000 5-1930
GENERAL PURPOSE VEHICLES (Trucks: ¼T M151; ¾T M37; 2½T M44; 5T M39)	Col. F. L. Havel	Mobility Command, Warren, Mich.	526-1380 X-620
GENERATORS	Col. E. B. Warner	Mobility Command Warren, Mich.	536-1380 X-601
XM-561	Maj. R. L. Berquist	Tank-Automotive Center, Warren, Mich.	536-1380 X-638
SELECTED AMMO	Col. R. S. Crossman	Munitions Command, Dover, N. J.	Foxcroft 1-2100 X-3230
M-60 TANK (M-48A3 TANK)	Col. W. L. Drennan	Mobility Command, Warren, Mich.	536-1280 X-510
RIFLES	Lt. Col. H. W. Yount	Weapons Command, Rock Island, Ill.	788-8411 X-6546
COMBAT VEHICLES (105mm SP How., M108 155mm SP How., M109 Cmd & Rcn Carr., M114 AIFV)	Col. T. W. Davis, III	Weapons Command, Rock Island, Ill.	78-8411 X-6626
SHERIDAN	Col. Paul A. Simpson	Weapons Command, Rock Island, Ill.	788-8411 X-6734

SPECIAL ASSISTANT TO COMMANDING GENERAL FOR PROJECT MANAGEMENT:
Col. J. L. Lewis, Bldg. T-7, Rm. 1780, OXford 57945
OFFICE OF PROJECT MANAGER STAFF OFFICERS:
Mr. Carl Black, Admin. Asst., Bldg. T-7, Rm. 2645, OXford 55580
Wash., D. C.

NOTES FOR EDITORS

Featured below are a number of items about interesting projects within the Department of Defense which can easily be expanded into articles for house organs and trade magazines. Any editor who desires further information, pictures or interviews on any of these subjects is invited to contact the Magazine & Book Branch, Office of the Assistant Secretary of Defense for Public Affairs, Room 20757, The Pentagon, Telephone: OXford 78010, 78031, or 78034. This office is prepared to meet your request for *any* information concerning the DOD and its component parts.

* * *

ARMY'S ATOMIC CLOCK

A lightweight atomic clock which marks the time down to a ten billionth of a second has been developed for the Army by General Technology Corp., Torrance, Calif. In contrast to many models of atomic clocks weighing hundreds of pounds, the new clock weighs 44 pounds and occupies only about one cubic foot—a package manageable by one man and rugged enough for field use. This atomic clock depends on the resonance of the natural element rubidium for its accuracy and stability, measured by the gain or lag of only one second in about 300 years.

* * *

AIR FORCE'S ELECTRONIC FENCE

In early 1964 the lives of three American flyers and two U.S. aircraft were lost after an inadvertent penetration of Communist airspace over East Germany. During November 1964, an "electronic fence in the sky" between Western Europe and the Communist nations was constructed and is now in operation. Completed in six months by dismantling, moving and reactivating ground control intercept radar stations at new border locations, the radar "fence" will provide positive location checks of all aircraft. Major management and transportation obstacles were overcome in the relocation.

NAVY, AIR FORCE TEST ION ENGINES

A successful 30-minute ballistic flight test of an Air Force ion engine in space has cleared the way for the first orbital test of an electrical propulsion system this spring. The ion engine will be teamed with AEC's SNAP-10A nuclear reactor power supply aboard an Agena satellite which will be launched by an Atlas SLV-3 booster. In addition, in 1965 the Navy plans to flight test for the first time a plasma pinch ion engine satellite in space. Telemetered data on acceleration, propellant consumption and pressure, spin rate and voltages will be recorded on the ground so that the thrust, specific impulse and reliability of the engine can be determined.

Ion rockets are extremely low-thrust devices which eject a stream of charged particles to propel space vehicles over vast distances at speeds as great as 100,000 miles per hour. On deep penetration space missions, ion rockets can travel faster than chemical rockets in addition to carrying a far greater payload.

* * *

NAVY CONTINUES DEEP SUBMERGENCE PROJECTS

A second phase of the Navy's continuing probes into the depths of the seas has been planned. The project will be an extension of last summer's Operation Sea Lab I which tested man's ability to live at 392 feet beneath the ocean's surface for prolonged periods. Sea Lab II will be deeper and involve more aquanauts than Sea Lab I. The plans for this operation are firm with August the target date.

* * *

LINDBERG'S BUTTER

A life-saving burn ointment has been credited with reducing the mortality rate by more than 40 per cent among patients with burns over 30 to 60 per cent of their bodies. The buttery consistency of the new ointment allows it to be applied directly to the burn. No dressing is used. Its content of sulfonamide fights off a wide variety of bacteria and allows the wound to heal without infection. The ointment was developed by the Surgical Research Unit at the Brooke Army Medical Center, Ft. Sam Houston, Tex. The ointment's nickname honors Colonel Robert B. Lindberg, Chief of the Research Unit's Bacteriology Branch.

Absolute Privilege

(*Cont. from page 8*)

itself which is determinative of whether or not it is entitled to absolute privilege. Here the occasion was compliance with government security regulations enacted for the protection of state secrets. *Barr v. Matteo, supra; Preble v. Johnson, 275 F. 2d 275 (10th Cir. 1960)*

"Further, the communication sued upon was circulated only in closely restricted channels. It was not available to anyone except upon a 'need to know' basis and has not been published or otherwise made available to the public.

"To subject Philco, in performing its duty of reporting the compromise, or suspected compromise of classified information to the Department of Defense, to 'the burden of a trial and to the inevitable danger of its outcome would,' in the language of Judge Learned Hand, 'dampen the ardor of all but the most resolute, or the most irresponsible, in the inflinching discharge of their duties. See *Gregoire v. Biddle, 177 F. 2d. 579.*"

In an opinion rendered Oct. 28, 1063, the Circuit Court of the County of Arlington, Commonwealth of Virginia, earlier reached the same result as to the deputy security officer who brought the matter originally to the attention of the Corporation Security Officer.

Knowledge of these two decisions may be of interest and assistance in the conduct of field investigations and administration of the security program.

CALENDAR OF EVENTS

March 1–3: American Management Assn. Data Processing Conference, New York, N. Y.

March 2–4: American Legion National Rehabilitation Conference, Washington, D. C.

March 9: Armed Forces Management Assn. Luncheon, Navy Yard Annex Officers Club, Washington, D. C. Speaker on "Defense Industry Management," T. A. Smith, Exec. Vice President, Radio Corp. of America.

March 8–10: American Institute of Aeronautics & Astronautics (AIAA) U. S. Navy Marine Systems & Anti-submarine Warfare Conference, San Diego, Calif. Sponsor: AIAA (W. H. Arata Jr., Northrop Corp., 9744 Wilshire Blvd., Beverly Hills, Calif.). Navy coordinator: Office of Naval Material (MAT 32), Washington, D. C.

March 9: 23rd Anniversary of U. S. Army Transportation Corps.

March 9–10: Symposium on Disarmament and Arms Control, Los Angeles, Calif. Sponsor: American Ordnance Assn. Participants: Representatives of Univ. of Michigan, Institute of Defense Analysis, and DOD. Attendance will be from industry, academic world and Armed Forces.

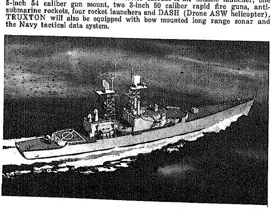
March 11: Industrial Procurement Conference, Oakland, Calif. Sponsor: Local Chamber of Commerce. DOD coordinator: Defense Supply Agency. Navy Coordinator: Inspector of Naval Material, San Francisco, Calif.

March 15–20: Annual Conference and Corrosion Show, at Chase Park Plaza Hotel, St. Louis, Mo. Sponsor: National Assn. of Corrosion Engineers (T. J. Hull), 1061 M&M Bldg., Houston, Tex.

March 30–April 2: National Petroleum Refiners Association Conference, Houston, Tex.

April 20–23: Sea-Air Space Exposition, Washington, D. C. Sponsor: Navy League (RAdm. Ralph Whitner, USN-Ret.). Navy Coordinator: Office of Chief of Information (Cdr. E. Holmguaard).

The Navy's second nuclear powered guided missile frigate, TRUXTON, was launched at the New York Shipbuilding Corp., Camden, N.J., in December. The ship, shown here in an artist's drawing, will join the fleet in early 1966. It will be armed with one twin Terrier surface-to-air missile launcher, one 5-inch 54 caliber gun mount, two 3-inch 50 caliber rapid fire guns, anti-submarine rockets, four rocket launchers and DASH (Drone ASW helicopter). TRUXTON will also be equipped with bow mounted long range sonar and the Navy tactical data system.



New Security Film Explains Spy Methods

A new industrial security training film, "Enemy Agent and You," is available at major U.S. Army Audio-Visual Centers throughout the United States. The film portrays methods used by enemy intelligence agents to obtain information they believe to be of value as "classified defense information."

Defense contractors desiring to show this film may obtain it on a loan basis from their cognizant DOD Security Office.

Security Classification

(*Cont. from page 7*)

classification. This will give further meaning to the clearly stated provision that classification of physical things such as hardware, equipment and the like are classified only to the extent necessary to protect from unauthorized disclosure classified information contained in or revealed by the physical object.

A paragraph, covering the classification of privately owned information, points out that classification would not be proper unless Government has exercised control, in whole or in part, or has established a proprietary interest in the information. Attention is invited, however, to the fact that the private owner who believes his information requires security protection should protect it on a personal basis while seeking advice from Army, Navy, or Air Force.

Department of Defense
FINANCIAL SUMMARY

(Billions of Dollars)

	FY 1961	FY 1962		FY 1963	FY 1964	FY 1965	FY 1966
		Original	Final				
trategic Retaliatory Forces		7.6	9.0	8.4	7.3	5.3	4.5
ontinental Air and Missile Defense Forces		2.2	2.3	2.0	2.1	1.8	1.8
eneral Purpose Forces		14.5	17.4	17.6	17.7	18.1	19.0
irlift/Sealift Forces		.9	1.2	1.4	1.3	1.5	1.6
eserve and Guard Forces		1.7	1.8	1.8	2.0	2.1	2.9
esearch and Development		3.9	4.2	5.1	5.3	5.1	5.4
eneral Support		11.4	12.1	13.0	13.7	14.3	14.6
etired Pay		.9	.9	1.0	1.2	1.4	[a] 1.5
ilitary Assistance		1.8	1.8	1.6	1.2	1.2	1.3
otal Obligational Authority [b]	46.1	44.9	50.8	51.9	51.9	50.9	51.7
Less Financing Adjustment	3.0	1.3	1.4	.8	.9	1.1	3.2
ew Obligational Authority	43.1	43.7	49.4	51.1	50.9	49.7	48.6
Adjustment to Expenditures	+1.6	+1.0	−1.2	−1.1	+.3	−.4	+.4
Total Expenditures	44.7	44.7	48.2	50.0	51.2	49.3	49.0
A by Department and Agency							
Department of the Army	10.4	10.4	12.5	12.0	12.5	12.0	12.4
Department of the Navy	12.7	12.4	14.8	14.9	14.8	14.7	15.3
Department of the Air Force	19.9	18.5	19.7	20.6	20.3	19.4	18.9
Civil Defense	—	—	.3	.1	.1	.1	.2
Defense Agencies/OSD (excluding Retired Pay and Family Housing)	.3	.4	.3	.9	1.1	1.2	1.3
Retired Pay	.8	.9	.9	1.0	1.2	1.4	[a] 1.5
Defense Family Housing [c]	.5	.5	.5	.7	.7	.7	.7
Military Assistance	1.5	1.8	1.8	1.6	1.2	1.2	1.3
Total [b]	46.1	44.9	50.8	51.9	51.9	50.9	51.7
EMO: Increases since FY 1961 in payments to etired personnel and in rates of compensation ncluded above:							
Increased Compensation Rate:							
Military		—	—	.1	1.2	1.6	1.6
Civilian		—	—	.2	.3	.6	.6
Increased Payments to Retired Personnel		.1	.1	.2	.4	.6	.7
Total		.1	.1	.5	1.9	2.8	2.9

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[a] The government's total "unfunded past service costs" of the military retirement program at current rates is estimated to amount to $61.1 billion at July 1, 1965. In FY 1966, it would require $2.2 billion und "current service costs."

[b] Excludes cost of nuclear warheads.

[c] In FY 1961 and FY 1962 funds for this activity were appropriated to the military departments.

OASD Comptroller
25 January 1965

Department of Defense

DIRECT BUDGET PLAN (TOA), NEW OBLIGATIONAL AUTHORITY, DIRECT OBLIGATIONS AND EXPENDITURES

Fiscal Years 1964–1966

(Millions of Dollars)

	Direct Budget Plan (TOA)			New Obligational Authority			Direct obligations			Expenditures		
	FY 1964	FY 1965	FY 1966	FY 1964	FY 1965	FY 1966	FY 1964	FY 1965	FY 1966	FY 1964	FY 1965	FY 1966
Functional Classification												
Military Personnel												
Active Forces	12,288	12,720	12,771	11,951	[a] 12,488	12.301	12,288	12,720	12,771	12.312	12,666	12,584
Reserve Forces	695	787	730	703	779	730	695	787	730	674	774	706
Retired Pay	1,211	1,399	1,529	1,228	1,399	1,529	1,211	1,399	1,529	1,209	1,380	1,510
Total	14,194	14,906	15,030	[b] 13,883	[b] 14,666	[b] 14,560	14,194	14,906	15,030	14.195	14,820	14,800
Operation and Maintenance	11,693	12,450	12,472	11,705	[a] 12,451	12,472	11,693	12,450	12,472	11,932	12,220	12,160
Procurement	15,831	14,026	13,917	15,645	13,386	11,412	15,643	13,500	12,900	15,351	13,275	13,220
Research, Development, Test, and Evaluation	7,137	6,563	6,764	6,984	6,485	6,709	6,873	6,600	6,700	7,021	6,700	6,400
Military Construction	988	911	1,357	949	940	1,313	980	995	1,170	1,026	1,000	920
Family Housing	672	667	748	644	631	736	635	673	700	580	630	660
Civil Defense	111	105	194	112	105	194	112	118	196	107	125	110
Revolving and Management Funds	—	—	—	—	—	—	—	—	—	−452	−670	−370
Total, Military Functions	50,625	49,628	50,481	49,922	48,663	47,395	50,131	49,243	49,168	49,760	48,100	47,900
Military Assistance [c]	1,237	1,223	1,258	1,000	1,055	1,170	1,236	1,213	1,248	1,485	1,200	1,100
Total, Mil. Functions and Mil. Assistance	51,862	50,851	51,739	50,922	49,718	48,565	51,367	50,456	50,416	51,245	49,300	49,000
Department or Agency												
Department of the Army	12,465	12,049	12,439	12,513	11,752	11,336	11,992	12,076	12,176	12,050	11,935	11,726
Department of the Navy	14,827	14,720	15,341	14,899	14,558	14,272	14,731	14,609	14,891	14,520	14,107	14,741
Department of the Air Force	20,272	19,440	18,882	19,446	18,961	17,992	20,389	19,126	18,378	20,509	18,963	18,235
Defense Agencies/OSD	2,950	3,315	3,625	2,951	3,287	3,601	2,906	3,314	3,527	2,574	2,969	3,088
Civil Defense	111	105	194	112	105	194	112	118	196	107	125	110
Total, Military Functions	50,625	49,628	50,481	49,922	48,663	47,395	50,131	49,243	49,168	49,760	48,100	47,900
Military Assistance [c]	1,237	1,223	1,258	1,000	1,055	1,170	1,236	1,213	1,248	1,485	1,200	1,100
Total, Mil. Functions and Mil. Assistance	51,862	50,851	51,739	50,922	49,718	48,565	51,367	50,456	50,416	51,245	49,300	49,000

[a] Includes amounts proposed for separate transmittal for pay increases: $98,000,000 in Military Personnel for military pay increase and $132,394,000 in Operation and Maintenance for civilian pay increase.

[b] In addition, transfers from working capital funds; FY 1964, $321,253,677: FY 1965, $240,000,000: FY 1966, $470,000,000.

[c] Consistent with the FY 1966 Budget Document presentation, Military Assistance orders (reservations) placed with the military departments are treated in the same manner as obligations.

OASD Comptroller
FAD-500
25 January 1965

Department of Defense

DIRECT BUDGET PLAN (TOA), NEW OBLIGATIONAL AUTHORITY, DIRECT OBLIGATIONS, AND EXPENDITURES

Fiscal Year 1966—By Functional Title and Service

(Millions of Dollars)

Functional Classification	Direct Budget Plan (TOA)					New Obligational Authority					Direct Obligations					Expenditures				
	Total	Army	Navy	Air Force	Defense Agencies and Civil Defense	Total	Army	Navy	Air Force	Defense Agencies and Civil Defense	Total	Army	Navy	Air Force	Defense Agencies and Civil Defense	Total	Army	Navy	Air Force	Defense Agencies and Civil Defense
MILITARY PERSONNEL																				
Active Forces	12,771	4,343	3,950	4,479	—	[a]12,301	[a]4,103	[a]3,805	[a]4,394	—	12,771	4,343	3,950	4,479	—	12,584	4,250	3,910	4,424	—
Reserve Forces	730	460	138	132	—	730	460	138	132	—	730	460	138	132	—	706	450	131	125	—
Retired Pay	1,529	—	—	—	1,529	1,529	—	—	—	1,529	1,529	—	—	—	1,529	1,510	—	—	—	1,510
Total	15,030	4,802	4,088	4,611	1,529	14,560	4,562	3,943	4,526	1,529	15,030	4,802	4,088	4,611	1,529	14,800	4,700	4,041	4,549	1,510
OPERATION AND MAINTENANCE	12,472	3,672	3,525	4,702	573	12,472	3,672	3,525	4,702	573	12,472	3,672	3,525	4,702	573	12,160	3,608	3,410	4,605	537
PROCUREMENT																				
Aircraft	6,367	344	2,172	3,850	—	5,810	344	1,916	3,550	—	5,902	335	2,017	3,550	—	5,516	347	1,950	3,220	—
Missiles	1,806	254	391	1,161	—	1,427	254	377	796	—	1,732	235	397	1,100	—	2,311	261	590	1,460	—
Ships	1,906	—	1,906	—	—	1,501	—	1,501	—	—	1,860	—	1,860	—	—	1,948	—	1,948	—	—
Ordnance, Vehicles, and Related Equipment	1,980	1,024	599	355	1	1,188	445	429	313	1	1,710	900	531	278	1	1,638	816	486	335	1
Electronics and Communications	999	240	417	334	7	772	104	365	294	7	910	230	349	325	6	924	245	356	316	7
Other Procurement	859	173	419	240	27	714	76	395	227	16	787	160	377	227	23	883	211	406	234	32
Total	13,917	2,036	5,905	5,941	35	11,412	1,223	4,984	5,181	24	12,900	1,860	5,530	5,480	30	13,220	1,880	5,735	5,565	40
RESEARCH, DEVELOPMENT, TEST, AND EVALUATION																				
Military Sciences	1,039	169	200	169	500	1,039	169	200	169	500	1,022	166	198	169	490	951	162	184	146	460
Aircraft	992	92	195	705	—	963	92	195	676	—	992	89	200	703	—	921	80	194	647	—
Missiles	1,780	641	381	758	—	1,772	633	381	758	—	1,758	629	373	756	—	1,849	611	409	829	—
Astronautics	1,040	20	24	995	—	1,022	2	24	995	—	1,034	17	24	993	—	1,057	18	27	1,013	—
Ships	332	2	330	—	—	332	2	330	—	—	322	2	320	—	—	291	1	290	—	—
Ordnance, Vehicles, and Related Equipment	364	184	180	—	—	364	184	180	—	—	372	183	189	—	—	331	180	151	—	—
Other Equipment	624	281	85	258	—	624	281	85	258	—	607	270	80	257	—	528	250	70	208	—
Programwide Management and Support	443	75	76	293	—	443	75	76	293	—	443	75	76	293	—	441	74	70	298	—
Emergency Fund	150	—	—	—	150	150	—	—	—	150	150	—	—	—	150	30	—	—	—	30
Total	6,764	1,464	1,473	3,177	650	6,709	1,438	1,473	3,148	650	6,700	1,430	1,460	3,170	640	6,400	1,375	1,395	3,140	490
MILITARY CONSTRUCTION																				
Active Forces	1,314	449	342	435	88	1,290	441	338	422	88	1,135	400	280	400	55	888	260	220	385	23
Reserve Forces	42	16	10	17	—	24	—	10	14	—	35	12	8	15	—	32	11	7	14	—
Total	1,357	465	351	452	88	1,313	441	348	436	88	1,170	412	288	415	55	920	271	227	399	23
FAMILY HOUSING	748	—	—	—	748	736	—	—	—	736	700	—	—	—	700	660	—	—	—	660
CIVIL DEFENSE	194	—	—	—	194	194	—	—	—	194	196	—	—	—	196	110	—	—	—	110
REVOLVING AND MANAGEMENT FUNDS	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	−370	−109	−67	−23	−171
Total—Military Functions	50,481	12,439	15,341	18,882	3,818	[a]47,395	[a]11,336	[a]14,272	[a]17,992	3,794	49,168	12,176	14,891	18,378	3,723	47,900	11,726	14,741	18,235	3,198
MILITARY ASSISTANCE	1,258					1,170					[b]1,248					1,100				
Total—Mil. Functions & Mil. Assistance	51,739					48,565					50,416					49,000				

[a] In addition, transfers from working capital funds; Army, $240 million: Navy, $145 million: Air Force, $85 million; total, $470 million.

[b] Consistent with the FY 1966 Budget Document presentation, Military Assistance orders (reservations) placed with the military departments are treated in the same manner as obligations.

OASD Comptroller
FAD–501
25 January 1965 (Rev)

Department of Defense—Military Functions

PROCUREMENT

FY 1964–1966

(Millions of Dollars)

Functional Classification	Direct Budget Plan (TOA)			New Obligational Authority			Direct Obligations			Expenditures		
	FY 1964	FY 1965	FY 1966	FY 1964	FY 1965	FY 1966	FY 1964	FY 1965	FY 1966	FY 1964	FY 1965	FY 1966
AIRCRAFT												
Army	532	383	344	458	442	344	487	390	335	300	373	347
Navy	1,880	1,952	2,172	1,796	1,836	1,916	1,964	1,938	2,017	1,859	1,721	1,950
Air Force	3,759	3,907	3,850	3,386	3,564	3,550	4,247	3,600	3,550	3,894	3,450	3,220
Total	6,172	6,241	6,367	5,640	5,842	5,810	6,698	5,928	5,902	6,053	5,543	5,516
MISSILES												
Army	406	234	254	462	234	254	395	230	235	496	273	261
Navy	846	664	391	1,108	663	377	910	583	397	981	772	590
Air Force	2,314	1,619	1,161	2,106	1,715	796	2,137	1,550	1,100	2,101	1,590	1,460
Total	3,567	2,518	1,806	3,676	2,612	1,427	3,441	2,363	1,732	3,577	2,635	2,311
SHIPS—Navy	2,088	1,765	1,906	2,060	1,930	1,501	2,043	1,780	1,860	2,078	1,818	1,948
ORDNANCE, VEHICLES, AND RELATED EQUIPMENT												
Army	1,004	864	1,024	1,307	648	445	916	860	900	964	725	816
Navy	456	482	599	478	436	429	394	493	531	404	422	486
Air Force	247	271	355	242	230	313	195	226	278	228	235	335
Defense Agencies/OSD	1	1	1	1	1	1	1	1	1	1	1	1
Total	1,707	1,618	1,980	2,028	1,315	1,188	1,505	1,580	1,710	1,597	1,383	1,638
ELECTRONICS AND COMMUNICATIONS												
Army	436	207	240	357	178	104	300	230	230	357	323	245
Navy	431	452	417	499	427	365	419	420	349	340	349	356
Air Force	506	465	334	485	412	294	442	451	325	560	405	316
Defense Agencies/OSD	10	10	7	12	16	7	10	10	6	7	10	7
Total	1,383	1,135	999	1,353	1,032	772	1,171	1,111	910	1,264	1,087	924
OTHER PROCUREMENT												
Army	257	187	173	322	154	76	214	190	160	198	277	211
Navy	441	372	419	385	338	395	378	386	377	380	385	406
Air Force	185	129	240	152	117	227	161	123	227	176	112	234
Defense Agencies/OSD	33	42	27	31	46	16	31	40	23	27	35	32
Total	915	730	859	889	655	714	785	739	787	782	809	883
TOTAL—PROCUREMENT												
Army	2,635	1,875	2,036	2,906	1,656	1,223	2,312	1,900	1,860	2,315	1,970	1,880
Navy	6,142	5,707	5,905	6,326	5,630	4,984	6,109	5,600	5,530	6,042	5,467	5,735
Air Force	7,011	6,391	5,941	6,370	6,038	5,181	7,181	5,950	5,480	6,959	5,792	5,565
Defense Agencies/OSD	44	53	35	44	62	24	42	50	30	35	46	40
TOTAL	15,831	14,026	13,917	15,645	13,386	11,412	15,643	13,500	12,900	15,351	13,275	13,220

OASD Comptroller
FAD-502
25 January 1965

Department of Defense—Military Functions

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

FY 1964–1966

(Millions of Dollars)

Functional Classification	Direct Budget Plan (TOA)			New Obligational Authority			Direct Obligations			Expenditures		
	FY 1964	FY 1965	FY 1966	FY 1964	FY 1965	FY 1966	FY 1964	FY 1965	FY 1966	FY 1964	FY 1965	FY 1966
MILITARY SCIENCES												
Army	150	159	169	207	156	169	146	159	166	179	160	162
Navy	176	182	200	178	178	200	194	183	198	194	184	184
Air Force	151	163	169	126	130	169	132	164	169	121	134	146
Defense Agencies/OSD	477	497	500	475	497	500	468	492	490	384	475	460
Total	954	1,001	1,039	986	961	1,039	939	997	1,022	878	953	951
AIRCRAFT												
Army	94	73	92	75	69	92	76	75	89	88	81	80
Navy	236	244	195	213	240	195	231	247	200	152	208	194
Air Force	752	825	705	326	737	676	686	826	703	699	612	647
Total	1,082	1,142	992	614	1,046	963	993	1,148	992	939	902	921
MISSILES												
Army	595	627	641	569	607	633	577	627	629	567	604	611
Navy	594	368	381	575	367	381	547	370	373	689	515	409
Air Force	1,019	793	758	1,002	787	758	1,018	794	756	1,096	938	829
Total	2,207	1,789	1,780	2,146	1,761	1,772	2,141	1,791	1,758	2,352	2,058	1,849
ASTRONAUTICS												
Army	25	15	20	19	15	2	20	18	17	18	24	18
Navy	30	24	24	40	31	24	35	28	24	51	35	27
Air Force	1,196	862	995	1,432	836	995	1,220	864	993	1,215	1,081	1,013
Total	1,251	901	1,040	1,491	882	1,022	1,275	910	1,034	1,284	1,140	1,057
SHIPS												
Army	1	1	2	1	1	2	—	1	2	—	1	1
Navy	275	273	330	288	275	330	250	273	320	264	272	290
Total	276	274	332	289	276	332	250	274	322	264	273	291
ORDNANCE, VEHICLES, AND RELATED EQUIPMENT												
Army	212	165	184	164	187	184	199	189	183	197	193	180
Navy	121	137	180	136	139	180	113	140	189	82	108	151
Air Force	—	—	—	—	—	—	—	—	—	1	—	—
Total	333	322	364	300	327	364	312	329	372	280	301	331
OTHER EQUIPMENT												
Army	285	244	281	295	261	281	233	258	270	215	261	250
Navy	69	66	85	61	58	85	61	66	80	48	61	70
Air Force	233	262	258	280	268	258	225	263	257	177	201	208
Total	587	573	624	636	587	624	518	587	607	440	523	528
PROGRAMWIDE MANAGEMENT AND SUPPORT												
Army	74	73	75	72	72	75	70	73	75	74	76	74
Navy	64	71	76	69	63	76	62	73	76	98	67	70
Air Force	309	300	293	379	391	293	311	300	293	414	384	298
Total	447	443	443	520	526	443	443	446	443	585	527	441
EMERGENCY FUND	—	118	150	2	118	150	—	118	150	—	25	30
TOTAL—RESEARCH, DEVELOPMENT, TEST, AND EVAL.												
Army	1,435	1,376	1,464	1,402	1,368	1,438	1,321	1,400	1,430	1,338	1,400	1,375
Navy	1,565	1,366	1,473	1,561	1,352	1,473	1,492	1,380	1,460	1,578	1,450	1,395
Air Force	3,660	3,206	3,177	3,544	3,149	3,148	3,592	3,210	3,170	3,722	3,350	3,140
Defense Agencies/OSD	477	615	650	477	615	650	468	610	640	384	500	490
TOTAL	7,137	6,563	6,764	6,984	6,485	6,709	6,873	6,600	6,700	7,021	6,700	6,400

OASD Comptroller
FAD-503
25 January 1965 (Rev)

Department of Defense

ESTIMATED OBLIGATIONS AND AMOUNTS AVAILABLE FOR OBLIGATION

General Fund Appropriations—FY 1964–1966

(Thousands of Dollars)

	Unobligated balance brought forward	New Obligational Authority	Transfers of prior year balances	Reimbursements	Recoveries of prior year obligations	Total available for obligation	Obligations incurred	Unobligated balance expiring for obligation	Unobligated balance carried forward
FISCAL YEAR 1964 — ACTUAL									
Department of the Army	1,555,854	12,513,223	146,254	2,138,004	—	16,353,334	13,983,349	7,587	2,362,398
Department of the Navy	4,263,775	14,899,299	120,000	756,571	7,900	20,047,545	15,361,918	23,091	4,662,535
Department of the Air Force	3,058,076	19,446,282	55,000	1,446,491	—	24,005,849	21,370,231	1,806	2,633,812
Defense Agencies/OSD	267,501	2,951,377	—	256,913	—	3,475,791	3,150,510	39,793	285,488
Civil Defense	18,294	111,562	—	240	—	130,095	112,643	1,027	16,426
Total—Military Functions	9,163,499	49,921,742	321,254	4,598,219	7,900	64,012,614	53,978,651	73,304	9,960,659
Military Assistance [a]	25,767	1,000,000	90,000	77,300	124,811	1,317,878	1,313,457	24	4,398
Total—Mil. Functions & Mil. Assistance	9,189,266	50,921,742	411,254	4,675,519	132,711	65,330,492	55,292,108	73,328	9,965,057
FISCAL YEAR 1965 — ESTIMATED									
Department of the Army	2,362,398	11,751,725	85,000	1,715,525	—	15,914,648	13,877,352	13	2,037,282
Department of the Navy	4,662,535	14,557,799	70,600	1,034,628	—	20,325,562	15,506,438	—	4,819,125
Department of the Air Force	2,633,812	18,961,435	84,400	977,117	—	22,656,764	20,158,727	—	2,498,036
Defense Agencies/OSD	285,488	3,287,325	—	273,437	—	3,846,250	3,579,342	—	266,908
Civil Defense	16,426	105,185	—	125	—	121,736	118,460	—	3,276
Total—Military Functions	9,960,659	48,663,468	240,000	4,000,832	—	62,864,959	53,240,319	13	9,624,627
Military Assistance [a]	4,398	1,055,000	50,000	24,400	116,799	1,250,597	1,240,597	—	10,000
Total—Mil. Functions & Mil. Assistance	9,965,057	49,718,468	290,000	4,025,232	116,799	64,115,556	54,480,916	13	9,634,627
FISCAL YEAR 1966 — ESTIMATED									
Department of the Army	2,037,282	11,336,459	240,000	1,721,356	—	15,335,097	13,808,425	—	1,526,672
Department of the Navy	4,819,125	14,271,800	145,000	738,138	—	19,974,063	15,609,663	—	4,364,400
Department of the Air Force	2,498,036	17,992,300	85,000	1,131,313	—	21,706,649	19,408,613	—	2,298,036
Defense Agencies/OSD	266,908	3,600,541	—	63,254	—	3,930,703	3,583,463	—	347,240
Civil Defense	3,276	193,900	—	125	—	197,301	196,112	—	1,189
Total—Military Functions	9,624,627	47,395,000	470,000	3,654,186	—	61,143,813	52,606,276	—	8,537,537
Military Assistance [a]	10,000	1,170,000	—	22,500	78,000	1,280,500	1,270,500	—	10,000
Total—Mil. Functions & Mil. Assistance	9,634,627	48,565,000	470,000	3,676,686	78,000	62,424,313	53,876,776	—	8,547,537

[a] Consistent with the FY 1966 Budget Document presentation, Military Assistance orders (reservations) placed with the military departments are treated in the same manner as obligations.

OASD Comptroller
FAD-504
25 January 1965

Department of Defense

ESTIMATED EXPENDITURES AND AMOUNTS AVAILABLE FOR EXPENDITURES

Fiscal Years 1964–1966

(Thousands of Dollars)

	Unexpended balance brought forward	New Obligational Authority	Transfers of prior year balances	Total available for expenditure	Expenditures	Balances withdrawn (—)or restored	Unexpended balance carried forward
FISCAL YEAR 1964 — ACTUAL							
Department of the Army	5,386,169	12,513,223	50,000	17,949,392	12,049,891	−88,604	5,810,896
Department of the Navy	13,770,564	14,899,299	30,000	28,699,862	14,520,037	−36,522	14,143,303
Department of the Air Force	9,763,542	19,446,282	20,000	29,229,824	20,508,648	−32,995	8,688,182
Defense Agencies/OSD	984,985	2,951,377	−100,000	3,836,362	2,574,196	−52,527	1,209,640
Civil Defense	114,089	111,562	—	225,650	106,826	−4,921	113,903
Total—Military Functions	30,019,349	49,921,742	—	79,941,091	49,759,598	−215,569	29,965,924
Military Assistance	2,388,810	1,000,000	90,000	3,478,810	1,485,277	−24	1,993,509
Total—Mil. Functions & Mil. Assistance	32,408,159	50,921,742	90,000	83,419,901	51,244,875	−215,593	31,959,433
FISCAL YEAR 1965 — ESTIMATED							
Department of the Army	5,810,896	11,751,725	50,000	17,612,621	11,935,467	−13	5,677,141
Department of the Navy	14,143,303	14,557,799	57,600	28,758,702	14,107,487	—	14,651,215
Department of the Air Force	8,688,182	18,961,435	43,400	27,693,017	18,962,677	—	8,730,340
Defense Agencies/OSD	1,209,640	3,287,325	−151,000	4,345,965	2,969,369	—	1,376,596
Civil Defense	113,903	105,185	—	219,088	125,000	—	94,088
Total—Military Functions	29,965,924	48,663,468	—	78,629,392	48,100,000	−13	30,529,379
Military Assistance	1,993,509	1,055,000	50,000	3,098,509	1,200,000	—	1,898,509
Total—Mil. Functions & Mil. Assistance	31,959,433	49,718,468	50,000	81,727,901	49,300,000	−13	32,427,888
FISCAL YEAR 1966 — ESTIMATED							
Department of the Army	5,677,141	11,336,459	55,000	17,068,600	11,725,565	[a] 66,344	5,409,379
Department of the Navy	14,651,215	14,271,800	80,000	29,003,015	14,741,030	8,600	14,270,585
Department of the Air Force	8,730,340	17,992,300	60,000	26,782,640	18,234,985	45,800	8,593,455
Defense Agencies/OSD	1,376,596	3,600,541	−195,000	4,782,137	3,088,420	—	1,693,717
Civil Defense	94,088	193,900	—	287,988	110,000	—	177,988
Total—Military Functions	30,529,379	47,395,000	—	77,924,379	47,900,000	120,744	30,145,123
Military Assistance	1,898,509	1,170,000	—	3,068,509	1,100,000	—	1,968,509
Total—Mil. Functions & Mil. Assistance	32,427,888	48,565,000	—	80,992,888	49,000,000	120,744	32,113,632

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[a] Includes appropriation to liquidate contract authority in amount of $54,044,000.

OASD Comptroller
FAD-505
25 January 1965

Department of Defense

ORDER OF MAGNITUDE DATA ON COMPARATIVE NEW OBLIGATIONAL AUTHORITY BY FUNCTIONAL TITLE AS IF FY 1966 BUDGET STRUCTURE HAD BEEN ADOPTED CIRCA 1948

FY 1954–1966

(Millions of Dollars)

Functional Classification	FY 1954	FY 1955	FY 1956	FY 1957	FY 1958	FY 1959	FY 1960	FY 1961	FY 1962	FY 1963	FY 1964	FY 1965	FY 1966
MILITARY PERSONNEL													
Active Forces	11,266	10,650	10,526	10,411	10,398	10,709	10,637	10,695	11,545	11,431	12,273	12,720	12,771
Reserve Forces	315	369	512	613	607	644	674	660	633	672	703	787	730
Retired Pay	387	424	495	515	567	640	715	790	920	1,026	1,228	1,399	1,529
Total	11,968	11,442	11,534	11,539	11,572	11,993	12,026	12,144	13,098	13,129	14,204	14,906	15,030
OPERATION AND MAINTENANCE	9,462	8,276	8,768	9,734	10,221	10,187	10,317	10,702	11,759	11,496	11,705	12,451	12,472
PROCUREMENT													
Aircraft	5,041	4,922	6,923	6,559	5,945	6,167	5,929	4,998	5,646	5,882	5,640	5,842	5,810
Missiles	569	234	764	2,135	2,090	3,966	2,030	2,078	3,230	3,969	3,676	2,612	1,427
Ships	759	1,150	1,274	1,335	1,723	1,943	1,140	2,246	2,967	2,939	2,060	1,930	1,501
Ordnance, Vehicles, and Related Equipment	2,990	527	405	247	90	545	703	1,034	1,830	1,959	2,028	1,315	1,188
Electronics and Communications	395	327	215	469	549	982	1,179	935	1,375	1,176	1,353	1,032	772
Other procurement	835	260	214	549	586	701	720	425	697	742	889	655	714
Total	10,588	7,420	9,795	11,294	10,983	14,304	11,701	11,716	15,746	16,667	15,645	13,386	11,412
RESEARCH, DEVELOPMENT, TEST, AND EVALUATION	2,165	1,708	1,828	2,185	2,345	3,777	5,620	6,033	6,402	6,993	6,984	6,485	6,709
MILITARY CONSTRUCTION	308	882	2,012	1,915	2,085	1,385	1,364	1,061	972	1,204	949	940	1,313
FAMILY HOUSING	—	—	—	—	—	—	—	—	—	590	644	631	736
CIVIL DEFENSE	—	—	—	—	—	—	—	—	257	126	112	105	194
REVOLVING AND MANAGEMENT FUNDS	100	1,119	—	75	130	57	30	30	(a)	(a)	—	—	—
SUBTOTAL—MILITARY FUNCTIONS—NEW OBLIGATIONAL AVAILABILITY	34,590	30,847	33,937	36,742	37,337	41,703	41,058	41,686	48,234	50,204	50,243	[b] 48,903	47,865
Transfers from prior year balances	—	−60	−750	−487	−590	−535	−430	−366	−388	−410	−321	−240	−470
TOTAL—MILITARY FUNCTIONS—NEW OBLIGATIONAL AUTHORITY	34,590	30,787	33,187	36,255	36,747	41,168	40,628	41,321	47,846	49,794	49,922	[b] 48,663	47,395
MILITARY ASSISTANCE—NEW OBLIG. AUTHORITY	3,762	1,204	1,016	2,018	1,340	1,515	1,331	1,785	1,577	1,325	1,000	1,055	1,170
TOTAL—MILITARY FUNCTIONS AND MAP	38,352	31,991	34,203	38,273	38,087	42,683	41,959	43,106	49,423	51,119	50,922	[b] 49,718	48,565

NOTE; Amounts include estimated comparability adjustments not supportable by accounting records.

[a] Excludes authority in Stock Funds (10 U.S.C. 2210(b)) to incur reimbursable obligations in anticipation of reimbursable orders to be received in subsequent years. Such authority is included in the Budget Document presentation as "New Obligational Authority."

[b] Includes amounts proposed for separate transmittal for pay increases: $95,000,000 in Military Personnel for military pay increase and $122,364,000 in Operation and Maintenance for civilian pay increase.

OASD Comptroller,
FAD-396

Department of Defense

ORDER OF MAGNITUDE DATA ON COMPARATIVE EXPENDITURES BY FUNCTIONAL TITLE AS IF FY 1966 BUDGET STRUCTURE HAD BEEN ADOPTED CIRCA 1948

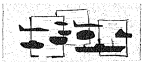
FY 1954–1966

(Millions of Dollars)

Functional Classification	FY 1954	FY 1955	FY 1956	FY 1957	FY 1958	FY 1959	FY 1960	FY 1961	FY 1962	FY 1963	FY 1964	FY 1965	FY 1966
MILITARY PERSONNEL													
Active Forces	10,963	10,643	10,665	10,384	10,441	10,545	10,390	10,651	11,530	11,386	12,312	12,666	12,584
Reserve Forces	293	341	439	514	608	615	654	648	607	599	674	774	706
Retired Pay	386	419	477	511	562	641	694	786	894	1,015	1,209	1,380	1,510
Total	11,643	11,403	11,582	11,409	11,611	11,801	11,738	12,085	13,032	13,000	14,195	14,820	14,800
OPERATION AND MAINTENANCE	9,162	7,931	8,400	9,487	9,761	10,378	10,223	10,611	11,594	11,874	11,932	12,220	12,160
PROCUREMENT													
Aircraft	9,080	8,804	7,835	8,647	8,793	7,730	6,272	5,898	6,400	6,309	6,053	5,543	5,516
Missiles	417	604	1,005	1,855	2,434	3,337	3,027	2,972	3,442	3,817	3,577	2,635	2,311
Ships	905	944	858	842	1,105	1,491	1,744	1,801	1,906	2,522	2,078	1,818	1,948
Ordnance, Vehicles, and Related Equipment	3,334	1,191	1,260	674	365	399	443	675	1,137	1,665	1,597	1,383	1,638
Electronics and Communications	700	441	660	704	663	720	1,093	1,042	1,139	1,427	1,264	1,087	924
Other Procurement	1,521	854	608	767	723	730	755	706	507	891	782	809	883
Total	15,957	12,838	12,227	13,488	14,083	14,409	13,334	13,095	14,532	16,632	15,351	13,275	13,220
RESEARCH, DEVELOPMENT, TEST, AND EVALUATION	2,187	2,261	2,101	2,406	2,504	2,866	4,710	6,131	6,319	6,376	7,021	6,700	6,400
MILITARY CONSTRUCTION	1,744	1,715	2,079	1,968	1,753	1,948	1,626	1,605	1,347	1,144	1,026	1,000	920
FAMILY HOUSING	—	—	—	—	—	—	—	—	—	427	580	630	660
CIVIL DEFENSE	—	—	—	—	—	—	—	—	90	203	107	125	110
REVOLVING AND MANAGEMENT FUNDS	−219	−611	−684	−323	−643	−179	−416	−300	−99	−1,401	−452	−670	−370
ADJUSTMENT TO BUDGET BASIS	−148	−6	86	—	—	—	—	—	—	—	—	—	—
TOTAL—MILITARY FUNCTIONS	40,326	35,531	35,792	38,436	39,070	41,223	41,215	43,227	46,815	48,252	49,760	48,100	47,900
MILITARY ASSISTANCE	3,629	2,292	2,611	2,352	2,187	2,340	1,609	1,449	1,390	1,721	1,485	1,200	1,100
TOTAL—MILITARY FUNCTIONS & MILITARY ASSISTANCE	43,955	37,823	38,403	40,788	41,258	43,563	42,824	44,676	48,205	49,973	51,245	49,300	49,000

NOTE: Amounts include estimated comparability adjustments not supportable by accounting records.

OASD (Comptroller)
FAD-397
25 January 1965



DEFENSE PROCUREMENT

Contracts of $1,000,000 and over awarded during month of January 1965:

DEFENSE SUPPLY AGENCY

5—**Texaco Inc.**, New York, N. Y. $2,841,435. Gasoline and fuel oil. Defense Fuel Supply Center, Washington, D. C.

13—**Charles Pfizer & Co.**, New York, N. Y. $1,311,298. 248,532 bottles of oxytetracycline tablets. Brooklyn, N. Y. Defense Medical Supply Center, Brooklyn, N. Y.

22—**United States Steel Corp.**, Washington, D. C. $1,316,289. 4,600,000 pounds of steel plates for use by the Navy. Homestead, Pa. Defense Industrial Supply Center, Philadelphia, Pa.

—**Riegel Textile Corp.**, New York, N. Y. $2,193,750. 4,114,272 yards of cotton sateen cloth. Trion, Ga. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

25—**Bonham Mfg. Co., Inc.**, Bonham, Tex. $1,096,658. 117,280 men's raincoats for the Army. Bonham. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

28—**J. P. Stevens & Co., Inc.**, New York, N. Y. $1,179,999. 1,364,000 yards of cotton cloth. Great Falls and Wallace, S. C. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

—**Burlington Industries, Inc.**, New York, N. Y. $1,147,187. 1,250,000 yards of cotton cloth. Cramerton, N. C. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

ARMY

4—**Peter Kiewit Sons Co.**, Omaha, Neb. $3,666,430. Construction and excavation work on the Dworshak Dam and Reservoir Project. Orofino, Idaho. Dist. Corps of Engineers, Walla Walla, Wash.

5—**Quiller Construction Co.**, Los Angeles, Calif. $1,566,080. Construction of 100 noncommissioned officer family housing units at Ft. Irwin, Calif. Dist. Corps of Engineers, Los Angeles, Calif.

—**Western Electric Co.**, New York, N. Y. $90,604,200. Research and development of NIKE–X missile system. Various locations in the United States. Project Office, Redstone Arsenal (AMC), Huntsville, Ala.

—**Standard Dredging Corp.**, New York, N. Y. $1,237,348. Dredging work on the Sabine Pass Channel and Anchorage Basin Project. Cameron Parish, Tex. U. S. Army Engineer Dist., Galveston, Tex.

8—**Sylvania Electronics Systems, Sylvania Electric Products, Inc.**, Needham, Mass. $8,000,000. Classified electronic equipment. Needham. U. S. Army Electronics Command (AMC), Ft. Monmouth, N. J.

11—**Al Johnson Construction**, Minneapolis, Minn. $5,479,410. Excavation and construction work at the Broken Bow Reservoir, Okla. Project. Broken Bow. U. S. Army Engineer Dist., Tulsa, Okla.

Contract Index

Contract information is listed in the following sequence: Date—Company—Dollar Value—Material—Location Work Performed—Contracting Agency

12—**Sperry Farragut Co., div. of Sperry Rand Corp.**, Bristol Tenn. $2,985,000. Bristol. Procurement Dist. (AMC), Cincinnati, Ohio.

—**Chris Berg, Inc.**, Seattle, Wash. $1,044,786. Exterior repair to a base hospital including repair of utilities and communication facilities. Elmendorf AFB, Anchorage, Alaska. Dist. Corps of Engineers, Anchorage, Alaska.

—**Philco Corp., Aeronutronics Div.**, Newport Beach, Calif. $2,685,483. Program study on the PERSHING missile system. Newport Beach. Los Angeles Procurement Dist., Pasadena, Calif.

—**Stewart & Stevenson Services**, Houston, Tex. $1,856,417. Generator sets for the PERSHING missile system. Houston. Engineer Procurement Office (AMC), Chicago, Ill.

13—**Continental Aviation & Engineering Corp.**, Detroit, Mich. $2,017,137. Production engineering services for engines used on 2½ and 5-ton tactical trucks. Detroit. U. S. Army Mobility Command (AMC), Warren, Mich.

15—**Gibbons & Reed Co.**, Portland, Ore. $11,723,875. Construction and excavation work on the John Day Lock and Dam Project. Gilliam County, Ore. Dist. Corps of Engineers, Walla Walla, Wash.

—**Esso Research & Engineering Co.**, Linden, N. J. $1,559,100. Research and development on high performance propellants. Linden. U. S. Army Missile Command (AMC), Huntsville, Ala.

—**TEMCO Electronics & Missile Co., div. of Ling-Temco-Vought, Inc.**, Dallas, Tex. $2,900,000. Classified research and development. Dallas. Army Electronics Command (AMC), Ft. Monmouth, N. J.

—**Bauer Dredging Co., Inc.**, Port Lavaca, Tex. $3,038,830. Excavation and bank stabilization on the Arkansas River Navigation Project. Gould, Ark. U. S. Army Engineer Dist., Little Rock, Ark.

—**Continental Drilling Co.** $1,202,250. Drilling work on the John Day Lock and Dam Project. Sherman County, Ore. and Klickitat County, Wash. Dist. Corps of Engineers, Walla Walla, Wash.

18—**Joseph L. Muscarelle, Inc.**, Maywood, N. J. $6,517,638. Construction of 366 family housing units in the Canal Zone which consists of 78 units at Ft. Davis; 62 units at Ft. Gulick; 180 units at Ft. Kabbe; 20 units at Ft. Amador; and 20 units at Coco Solo, Galeta Island. Dist. Corps of Engineers, Jacksonville, Fla.

21—**Harvey Aluminum, Inc.**, Torrance, Calif. $1,224,890. Supplementary hardware for use with the 8-inch projectile. Torrance. Los Angelss Procurement Dist., Pasadena, Calif.

22—**Hercules Powder Co.**, Wilmington, Del. $0,638,864. Loading, assembling, and packing of miscellaneous propellants, including HONEST JOHN, LITTLE JOHN, and NIKE boosters. Radford Army Ammunition Plant, Radford, Va. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—**Sperry Rand Corp.**, New York, N. Y. $3,537,148. Loading, assembling, and packing of various types of ammunition. Louisiana Army Ammunition Plant, Shreveport, Lo. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—**Teledyne Systems Corp.**, Los Angeles, Calif. $1,708,520. AN/ARC-73 radio sets. Los Angeles. U. S. Army Electronics Command (AMC), Ft. Monmouth, N. J.

25—**Power Engineering Co., Inc.**, Sioux City, Iowa. $1,187,000. Alteration of the electrical distribution system at Cape Kennedy Air Force Station (Eastern Test Range), Fla. Canaveral Dist. Corps of Engineers, Merritt Island, Fla.

—**Gahagan Dredging Corp.**, New York, N. Y. $1,954,595. Dredging work at the Baltimore Harbor Projects, Md. Dist. Corps of Engineers, Baltimore, Md.

26—**Canadian Commercial Corp.**, Ottawa, Canada. $2,205,849. Fabrication of five experimental Army gas turbines. Orenda Div. of Hawker Siddeley, Canada, Ltd., Toronto. U. S. Army Tank Automotive Center (AMC), Warren, Mich.

27—**R. E. Clarson, Inc.**, St. Petersburg, Fla. $2,179,000. Additions and changes at launch complex No. 34 for the SATURN IB. Cape Kennedy, Fla. Canaveral Dist. Corps of Engineers, Merritt Island, Fla.

28—**Edrow Engineering Co., Inc.**, Tacoma Park, Md. $1,017,680. Conversion of a warehouse to office space. Cameron Station, Alexandria, Va. Engineer Dist., Norfolk, Va.

—**Western Contracting Corp.**, Sioux City, Iowa. $1,399,502. Removal and disposal work at the Chesapeake and Delaware Canal Project. Cecil County, Md. Dist. Corps of Engineers, Philadelphia, Pa.

29—**Collins Radio Co.**, Richardson, Tex. $2,125,000. Radio terminal sets, AN/TRC-80. Richardson. U. S. Army Electronics Command, Procurement Div. (AMC), Philadelphia, Pa.

—**Canadian Commercial Corp.**, Ottawa, Canada. $4,856,519. Light weight airborne Doppler Navigation sets for MOHAWK aircraft. Canadian Marconi Co., Montreal. Electronics Command (AMC), Ft. Monomuth, N. J.

—**Harvey Aluminum Sales, Inc.**, Torrance, Calif. $11,122,871. Loading, assembling and packing of various types of ammunition. Milan Ammunition Plant, Milan, Tenn. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—**Instruments for Industry, Inc.**, Hicksville, N. Y. $1,089,197. Electronic countermeasure sets (AN/MLQ-26) with ancillary items and repair parts. Hicksville. U. S. Army Electronics Command, Procurement Div. (AMC), Philadelphia, Pa.

—**ESSO Research & Engineering Co.**, Linden, N. J. $1,082,511. Research program leading to development of Hydro-carbon air fuel cell batteries. Linden. Electronics Command (AMC), Ft. Monmouth, N. J.

—**William Matera**, San Antonio, Tex. Construction of a 8-story masonry building. Medina Annex, Lackland AFB, San Antonio. Dist. Corps of Engineers, Fort Worth, Tex.

Navy

4—**Westinghouse Electric Corp.**, Pittsburgh, Pa. $2,645,000. Research and development associated with nuclear propulsion plants for naval ships. Pittsburgh. Bureau of Ships.

—**Goodyear Aerospace Corp.**, Akron, Ohio. $18,715,692. SUBROC missiles. Akron. Bureau of Naval Weapons.

—**Bendix Corp., Eclipse Pioneer Div.**, Teterboro, N. J. $2,073,358. Stores release programmer systems for Navy aircraft. Teterboro. Bureau of Naval Weapons.

—**Sperry Rand Corp., Sperry Gyroscope Co. div.**, Syosset, N. Y. $4,341,000. Engineering services for ships inertial navigation systems equipment aboard US and UK ballistic missile submarines and supporting installations. Syosset. Bureau of Ships.

—**Franklin Institute**, Philadelphia, Pa. $6,484,116. Research work on problems in naval warfare. Philadelphia. Office of Naval Research.

5—**Boeing Co., Vertol Div.**, Morton, Pa. $10,992,000. Spare parts for the CH-46 and UH-46 helicopter aircraft. Morton. U. S. Navy Aviation Supply Office, Philadelphia, Pa.

—**Associated Aero Science Labs., Inc.**, Torrance, Calif. $1,598,092. Data gathering, assessment, and reduction services for missile tests. Naval Ordnance Test Station, China Lake, Pasadena, Calif., and at Torrance and Ridgecrest, Calif.

6—**Raytheon Co.**, Lexington, Mass. $8,816,679. Guidance and control groups for SIDEWINDER missiles. Lowell, Mass. Bureau of Naval Weapons.

—**Hughes Aircraft Co.**, Culver City, Calif. $1,358,000. PHOENIX missile system. Culver City. Bureau of Naval Weapons.

—**General Electric Co., Ordnance Div.**, Pittsfield, Mass. $6,328,000. POLARIS Mark 2 guidance assemblies. Pittsfield. Special Projects Office.

—**United Aircraft Corp., Sikorsky Aircraft Div.**, Stratford, Conn. $1,684,304. CH-53A helicopters. Stratford. Bureau of Naval Weapons.

—**United Aircraft Corp., Pratt & Whitney Aircraft Div., East Hartford**, Conn. $6,422,724. J52-P-8A aircraft engines. East Hartford. Bureau of Naval Weapons.

—**United Aircraft Corp., Pratt & Whitney Aircraft Div.**, East Hartford, Conn. $3,030,374. J60-P-6 engines. East Hartford. Bureau of Naval Weapons.

7—**Garrett Corp., AiResearch Mfg. Co. div.**, Phoenix, Ariz. $2,601,046. Ground power units for starting jet engines. Los Angeles, Calif. Bureau of Naval Weapons.

8—**Electric Storage Battery Co.**, Washington, D. C. $11,270,030. Submarine battery cell sets and elements. Philadelphia, Pa. Bureau of Ships.

—**Corbetta Construction Co.**, Des Plains, Ill. $1,610,509. Construction of 100 family housing units at Naval Training Center. Great Lakes, Ill. Dist. Public Works Officer, Ninth Naval Dist., Bureau of Yards & Docks.

11—**Litton Systems, Inc., Ordnance Control Div.**, Beverly Hills, Calif. $9,426,681. Spare parts for ASQ-01 computer system, A6A attack aircraft, and special electronics installations on E-2A aircraft. Beverly Hills. U. S. Navy Aviation Supply Office, Philadelphia, Pa.

13—**Marinette Marine Corp.**, Marinette, Wis. $4,343,330. Construction of eight large harbor tugs. Marinette. Bureau of Ships.

OFFICE OF THE SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

OFFICIAL BUSINESS

POSTAGE AND FEES PAID

Two Important Types of Defense Savings Explained

DOD Cost Reduction Program directives define the two main classes of "hard" savings as follows:

Budgeted Savings: Those savings which reduce fund requirements for a specific budget year as reflected in the Five-Year Force Structure and Financial Program submitted by a Military Department to the Office of the Secretary of Defense for inclusion in the President's budget. These savings also include those reductions in the President's budget made by the Congress provided such savings qualify within the criteria contained in DOD Cost Reduction directives.

Budgeted savings represent amounts excluded from the budget estimate of a Military Department because of cost reduction actions. They normally are the result of cost reductions which have continuing benefits in future fiscal years and reduce the total fund requirements in those years. Budgeted savings listings are part of the back-up documentation for DOD budget requests.

Realized Fund Savings: Those savings realized in a current year which have resulted from actions taken to reduce costs or requirements for which appropriations were made by the Congress, or for which funds were apportioned and made available for a function, item, or activity. These savings are those not previously identified as Budget Savings.

Realized fund savings are monies saved in appropriated, available funds because of new, improved or intensified management actions. They represent money which cost reduction actions have made available to use for a different purpose than that for which the money was originally earmarked.

Therefore, budgeted savings represent monies which were never requested, while realized fund savings represent monies which were appropriated and saved and which can be reprogrammed to new purposes because of cost reduction actions.

As an example, the Fiscal Year 1966 budget submission of the Department of the Navy identified budgeted savings in excess of $1 billion. This means that Navy and Marine Corps net financial requirements for FY 1966 are $1 billion less than they would have been but for accomplished and planned cost reductions.

New DOD Bibliography
Logistics Available

The 1965 edition of
Annual DOD Bibliography
Logistics Studies and Rela
Documents was released in J
uary. This is the third ann
bibliography published by
Defense Logistics Studies In
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1962.

The bibliography has appr
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completed studies but also c
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planned and in-process logis
studies, the bibliography
significant books, magazine
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logistics researchers and m
agers. These citations are
dexed by subject, contractor
applicable), and military s
sor.

Copies of the bibliography
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Va.

DEFENSE INDUSTRY BULLETIN

Volume 1 No. 3

March 1965

DEPARTMENT OF DEFENSE

Publication of

ASSISTANT SECRETARY OF DEFENSE-PUBLIC AFFAIRS

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DEFENSE BUDGET HIGHLIGHTS

". . . the program supported by this budget will increase our overall combat effectiveness and will provide effective forces in a high state of readiness for the defense of the vital interests of the United States."

Thus concludes Secretary of Defense Robert S. McNamara in the introduction to the statement he made on February 18, 1965, before the House Armed Services Committee on the "Fiscal Year 1966-70 Defense Program and 1966 Defense Budget," extracts of which begin on Page 1.

In recognition of the importance industry has come to attach to the Secretary of Defense's posture statement in assessing DOD plans and programs, this issue of the *Defense Industry Bulletin* is devoted almost entirely to its reproduction.

While space limitations permit only an abbreviated treatment of the statement, an attempt was made to include those portions of special interest to defense industry.

We hope that this presentation of the posture statement will contribute to a fuller understanding by industry of the nation's defense needs.

The Editors.

DEFENSE INDUSTRY
BULLETIN

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The *Defense Industry BULLETIN* is published monthly by the Business & Labor Division, Directorate for Community Relations, Office of the Assistant Secretary of Defense (Public Affairs). Use of funds for printing this publication was approved by the Director of the Bureau of the Budget.

The purpose of the *BULLETIN* is to serve as a means of communication between the Department of Defense (DOD) and its authorized agencies and defense contractors and other business interests. It will serve as a guide to industry concerning official policies, programs and projects, and will seek to stimulate thought by members of the defense-industry team in solving the problems that may arise in fulfilling the requirements of the DOD.

Material in the *BULLETIN* is selected to supply pertinent unclassified data of interest to the business community. Suggestions from industry representatives for topics to be covered in future issues should be forwarded to the Business & Labor Division.

The *BULLETIN* is distributed each month to the agencies of Department of Defense, Army, Navy, and Air Force, and to representatives of industry. Request for copies should be addressed to the Business & Labor Division, OASD/PA, Room 2E813, The Pentagon, Washington, D.C. 20301.

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Industry Expected To Benefit From ARPA Optical Grant Program

Plans to initiate a one-time optical equipment grant program to qualified U. S. universities that will eventually benefit defense industry were announced by the Advanced Research Projects Agency (ARPA).

Taking steps now to enhance the capability of the academic community will produce highly trained scientists required by industry and government to meet the needs of national defense at all times.

The program is intended to permit a higher degree of sophistication in optical research at these institutions. The major objective is to catalyze or assist in enlarging graduate programs in modern optics to provide, over a period of time, an output of capable and trained individuals in the appropriate disciplines.

Generally, individual grants will be limited to $200,000 or less. As a guide in the definition of modern optics, universities have been provided an illustrative list including Geometrical and Physical Optics, Electromagnetic Waves, Coherence Phenomena and Statistical Optics and Quantum Optics.

As part of its effort to assist the academic community in solving defense problems of the future, ARPA previously initiated grant programs for equipment for materials research and, through its program of Interdisciplinary Research on Materials, it provides continuing support for an expanded program of university research in the materials sciences.

Military Construction Bill Goes To Congress

A Military Construction Bill requesting new authorization in the amount of $1,945,497,000 was submitted by the Department of Defense to the Congress for Fiscal Year 1966. New construction projects directed primarily to the strengthening of our military posture on a world-wide basis amount to $1,438,331,000 of the total requested, including $228,434,000 for the construction of 12,500 new family housing units. The balance of the request, amounting to $507,166,000, covers other family housing costs which require annual authorization, including amounts for operation and maintenance, repair and improvement of existing units.

Proposed construction sites are located at over 300 installations throughout the United States, as well as at locations in the Caribbean, Europe, Pacific Islands, Iran, Japan, and the Philippines. Projects are also proposed in support of such essential contributing Defense activities as research and development, supply, medical care, training and intelligence. The bill will provide many needed replacements for obsolete and inefficient facilities, necessary to reduce the cost of base operations and maintenance. Details follow:

	UNITED STATES	*OVERSEAS*	*UN-SPECIFIED*	*TOTAL*
Army	$305,020,000	$76,559,000	$10,000,000	$391,579,000
Navy	240,944,000	62,649,000	10,000,000	313,593,000
Air Force	280,509,000	92,821,000	10,000,000	383,330,000
Reserve Components	21,200,000	—	—	21,200,000
Defense Agencies	26,507,000	3,688,000	70,000,000	100,195,000
Family Housing				735,600,000

Defense Budget Highlights

Approach To The FY 1966-70 Program And The FY 1966 Budget

[For the sake of clarity and continuity, paragraph markings have been deleted from the original text to the Secretary of Defense's posture statement. In addition some subheads have been added to assist the reader in locating individual programs and projects.]

As I have reported to you before, when I took office in January 1961, President Kennedy gave me two general instructions:

- Develop the military force structure necessary to support our foreign policy without regard to arbitrary budget ceilings.
- Procure and operate this force at the lowest possible cost. President Johnson has emphasized that these same basic principles should guide the development of the FY 1966-70 programs and the FY 1966 budget request.

Our Defense program and budget is based solely on our own national security requirements and is not related to the announced reductions in Soviet defense expenditures. Of course, in planning our own forces, we do take account of the size and character of the opposing forces. But, until we have independent evidence, acquired through our own sources, that reductions have actually been made, we do not reflect them in our intelligence estimates.

The decline in our own Defense expenditures from a high of $51.2 billion in FY 1964 to an estimated $49.0 billion in FY 1966 simply reflects the substantial completion of the build-up started in 1961 and the results of our highly successful cost reduction program.

In developing the FY 1966-70 program and the FY 1966 budget, I have carefully reviewed all of the proposals originating from the Joint Chiefs of Staff, the military departments and other Defense agencies. This process began nearly a year ago, and through a step-by-step review of the 1966 and prior year programs, it was possible to reduce the FY 1966 budget request from about $56.5 billion in new obligational authority, as proposed by the Services and Defense agencies, to approximately $48.6 billion, a reduction of about $8 billion. Thus, our FY 1966 request for new obligational authority is $1.2 billion less than the amount appropriated for the current fiscal year (including the proposed FY 1965 supplemental). Expenditures in FY 1965, currently estimated at $49.3 billion, will be about $1.9 billion less than the amount estimated a year ago. FY 1966 expenditures are estimated at $49.0 billion, about one-third billion dollars less than now estimated for the current fiscal year. While our FY 1966 budget request does not include all of the forces or force modernizations recommended by the military departments and individual Service chiefs, the Joint Chiefs of Staff agree that the program supported by this budget will increase our overall combat effectiveness and will provide effective forces in a high state of readiness for the defense of the vital interests of the United States. . . .

The Defense Program And The Economy

Federal expenditures on goods and services for national defense and related purposes (atomic energy and space) have accounted in recent years for approximately ten percent of our gross national product and nearly one-tenth of our total employment. Of the roughly 6.7 million persons estimated to be engaged in defense work, over half are employed directly by the Federal Government. The rest work either for contractors and subcontractors employed on defense programs or for firms providing materials and services to defense contractors. However, the distribution of this work by industry, by company and by community is very uneven. Most defense-related work is concentrated in five manufacturing industries—ordnance, aircraft, shipbuilding, communications equipment and electronic components. These major Defense industries are, themselves, highly concentrated in certain states and geographic areas and, indeed, our military installations, with their military and civilian complements, are also geographically concentrated to a considerable degree, not infrequently in the same areas as Defense Industries. In some states more than ten per cent of total personal income is derived from Defense Sources and in many communities the Defense contractors are the principal sources of employment.

National Defense programs also employ a very large proportion of the nation's engineers, scientists, technicians and highly skilled craftsmen. Over half of the total national research and development effort is supported by these programs. Indeed, the "aircraft and parts" and the "communications and other electrical equipment" industries, which receive more than three-quarters of all Federal Government research funds spent in industry, employ over one-fourth of all engineers and scientists in American industry and well over one-third of those are engaged primarily in R&D.

Thus, the Defense Department, as the principal Federal agency engaged in these programs, has a vital concern with their impact both on the Nation as a whole and on the individuals, communities, companies and industries involved. We recognize our obligation to do everything we properly can to minimize the disruptive effects of changes in our programs and to assist, insofar as we are able and the law permits, those who are adversely affected by these changes. The Defense Department, however, cannot and should not assume responsibility for creating a level of demand adequate to keep the economy healthy and growing. Nor should it, in developing its programs, depart from the strictest standards of military need and operating efficiency in order to aid an economically distressed company or community. The Congress has underscored this limitation by explicitly forbidding in our annual appropriation act "the payment of a price differential on contracts . . . for the purpose of relieving economic dislocations."

Defense Department policy in this regard is to buy what we need, when we need it, at the lowest cost to the Government, quality and delivery schedules considered.

There are, however, a number of measures which the Government can take to alleviate hardships on particular individuals and communities during the period of readjustment, again keeping in mind that the problems of adjustment stemming from changes in Defense spending are generally similar in nature to the dislocations which result from other economic and technological changes. These include:

- The maintenance of employee income during the period of readjustment. This is the task of the Federal-State unemployment insurance system, improvements to which are now being studied.
- Job information and placement services. The Department of Labor operates several major programs in this area which, although not specifically designed to deal with problems arising from Defense-related shifts, have proven useful in easing the impact of previous curtailments in Federal expenditures. These include the Federal-State Employment Service, the Mass Layoff and Community Employment Development programs and a supplemental data processing and telecommunications system to facilitate inter-area recruitment. Various State employment services have also developed special programs to cope with sudden unemployment problems.
- Training and retraining. Among the programs in this area are those under the Manpower and Development Training Act and those of the Area Redevelopment Administration. The DOD itself, in cooperation with other agencies, has developed its own training programs for

of, say, 19 submarines with the Poseidon missile could amount to as much as $2 billion, including the cost of missile development and production. . . .

Strategic Defensive Forces

The Overall Level of the Anti-Bomber Defense Program.

. . . During the last four years we have made some progress in reorienting the anti-bomber defenses to the changing character of that threat. The vulnerability of the system is being reduced by providing an improved backup to the SAGE system and by dispersing the manned interceptors. Marginal and obsolete units have been eliminated from the forces and new and more effective systems are being introduced. This effort will be continued during the FY 1966-1970 program period.

Surveillance, Warning and Control. The surveillance, warning and control network constructed during the 1950's was oriented to manned bomber attack through the northern approaches over Canada and around the flanks through the Atlantic and Pacific oceans. . . . Thus, the arrival of the missiles would, in itself, signal the attack long before the bombers could reach their targets. As a result, large portions of the existing surveillance, warning and control system constructed during the 1950's are either obsolete or of marginal value to our overall defense.

Semi-Automatic Ground Environment System (SAGE). . . . Instead of the BUIC II, we now plan to deploy BUIC III in combination with SAGE Direction Centers. . . . Additional funds have been included in the FY 1966 budget for the SAGE/BUIC system.

Radars. . . . in order to make the inputs from the 27 FAA radars usable in the automated SAGE/BUIC III system, they must be converted into the appropriate computer language by what is called a "digitizer." We plan to test a new type of digitizer this summer and buy half of the requirement in FY 1966 and the balance in FY 1967. About $11 million has been included in our FY 1966 budget request for this purpose. . . .

Manned Interceptors. Considering the size and character of the bomber threat we are likely to face through FY 1970, I believe the present manned interceptor force is larger than needed. . . .

Surface-to-Air Missiles. The surface-to-air missile programs are essentially the same as those described here last year.

Qualitative Improvements to the Anti-Bomber Defenses.

While the present anti-bomber forces may be considered quantitatively excessive in the light of the threat, further improvements need to be made in the qualitative characteristics of the forces.

I have already touched on the planned improvements to the SAGE/BUIC system. We have also included funds in the FY 1966 budget for a number of other possible improvements in the more distant future.

Production and Deployment of a New Manned Interceptor. By far the most important issue in the anti-bomber defense area is the production and deployment of a new manned interceptor . . . . it is not at all clear at this time that a new manned interceptor system would have priority over new advanced surface-to-air missile systems now under study.

Nor is it clear at this time that the YF-12A, which has already been substantially developed, would be preferable to an interceptor version of the F-111. . . .

The F-111 is already nearing production. The Navy version, the F-111B, together with the Phoenix air-to-air missile systems now in development, is essentially an interceptor aircraft and could be modified for use in continental defense. We will continue to have this option for some time into the future since the F-111 will be in production at least through the end of this decade.

The development of the YF-12A has been underway since FY 1962. About $180 million has been programmed for this project through the current fiscal year. Prototypes are now available for flight test and $28 million has been included in the FY 1966 budget to continue development, test and evaluation. The YF-12A incorporates the ASG-18/AIM-47A fire control and air-to-air missile system which has been under development for some years.

No decision on the production of the F-12A needs to be made now. If we were to decide to go ahead with deployment of an F-12A type aircraft, we would most likely produce an interceptor version of the larger SR-71 aircraft which has a considerably greater range than the YF-12A. This particular option would still be open to us in the FY 1967 budget period with no great cost penalty. Even so, the five-year systems cost of a force of F-12A's would amount to about $4 billion.

Hawk. Funds have also been included in the FY 1966 budget for the development of new components which would increase the capability of the Hawk surface-to-air system. . . .

Advanced Air Defense System.

. . . We have increased the FY 1965 program through reprogramming and we are requesting additional funds in the FY 1966 budget to continue advanced development.

Airborne Warning and Control System (AWACS). . . . we are reducing the effort on the aircraft system to a $3 million level in FY 1966. However, the problem is so important that we believe an additional $8 million in FY 1966 is completely justified to explore the extremely difficult technology of long range airborne radar for detection of aircraft against ground clutter.

Ballistic Missile Warning and Defense.

Defense against ballistic missile attack, whether from missile-launching submarines or land bases, comprises a capability both for warning and for tracking, intercepting and destroying the incoming warheads.

Ballistic Missile Early Warning System. . . . Last year we undertook major improvements to this system. About $20 million has already been provided for this purpose and another $9 million is included in the FY 1966 budget.

As I informed the Committee last year, we are modifying selected air defense radars on the East, West and Gulf coasts to give them some detection capability for shorter range missiles which might be launched from submarines, thereby providing at least a few minutes of warning. About $10 million has already been programmed for this purpose and another $10 million is included in the FY 1966 budget to complete the work. . . .

Over-the-Horizon Radar. . . . Additional funds are included in the FY 1966 budget to continue research and development and to procure equipment to augment the present system.

Nike X. . . . we propose to continue the development of the Nike X system on an urgent basis and a total of about $400 million has been provided in the FY 1966 budget for that purpose, including $10 million for some preliminary production engineering. We plan to reexamine the question of production and deployment of the Nike X system again next year. Considering the vast amount of development, test and evaluation work still to be accomplished, deferral of this decision to the FY 1967 budget should not delay an initial operational capability by many months beyond what we could expect to achieve if we were to start production in FY 1966.

Anti-Satellite Defense. Last year we were making certain modifications in the Nike-Zeus and Thor systems to give them a capacity within certain ranges to intercept and destroy hostile satellites. Both of these systems reached operational status last summer.

We are also proceeding with two large ground based optical installations for satellite tracking and photography. The first, at Cloudcroft, New Mexico, . . . will become operational shortly. . . . The second system, in Maui, Hawaii, will become operational in 1965 and should have an even higher resolution. Both systems, however, are subject to atmospheric distortions and are limited to periods near dawn or sunset.

Civil Defense

. . . we intend to emphasize four aspects of the program during FY 1965 and FY 1966:

- Expansion of the present shelter survey program to include structures too small to qualify as public fallout shelters, i.e., small business facilities, duplexes and single family residences.
- Provision of architectural and engineering advice and assistance to stimulate the development of dual-purpose, low cost, fallout shelters in new construction or major structural modification projects, through the application of various design techniques.
- Development of plans to identify more precisely the residual shelter requirements and to ensure the efficient use of currently available shelter by matching individuals with specific shelter spaces.
- Provision of portable ventilation kits which will significantly increase the capacity of existing shelter space.

Shelter Survey and Marking. . . . $36.3 million has been included in the FY 1966 request for shelter surveys. Of this amount, $13.3 million is requested to support the continuing survey and marking program which, during FY 1966, should add about 6 million additional spaces to the inventory. . . .

In the case of single family homes, a pilot test using a questionnaire type technique is already underway. Many private homes, just as the larger structures covered by the National Fallout Shelter Survey, are presently capable of providing significant protection. The purpose of the "single family home survey" is to inform the homeowner of the existing protection already available to him. . . .

In total, $23 million is requested in FY 1966 for a full scale effort in these two new phases of the survey program.

Shelter Development. . . . We propose in FY 1966 to expand the provision of architectural and engineering advice on such matters to a level of $3 million. . . .

Regional Operations Centers. . . . eight regional centers have been planned. . . . The cost of constructing the remaining seven facilities on a more austere basis is estimated at $9.9 million, of which $2.1 million is already available from prior year appropriations. The remaining $7.8 million has been included in the FY 1966 budget.

Shelter Provisions. . . . $23.4 million is requested for FY 1966 to procure stocks for an additional 12 million spaces . . . . the FY 1966 request includes $3.6 million to defray the cost of modifying the water systems in some 18,000 buildings containing several million shelter spaces.

. . . includes $25 million for the procurement of portable ventilation kits which would substantially increase the capacity of existing non-ventilated shelter space. . . .

Warning. Of the $1.3 million requested in the FY 1966 budget for this category, $0.4 million supports the maintenance and improvement of the Washington area warning system. The remaining $0.9 million provides for fallout protection at an additional 228 State and local warning points in the national warning system. . . .

Emergency Operations. The $13.3 million included in the FY 1966 budget for emergency operations covers four activities—the Emergency Broadcast System, damage assessment, radiological defense and emergency operations systems development. . . .

Financial Assistance to States. . . . $30.5 million in matching funds are requested for FY 1966 for financial assistance to the States. . . .

Research and Development.

The FY 1966 request includes $15 million, compared with $10 million for the current fiscal year, to expand the civil defense research and development program. . . .

Management.

For overall program management, $14.6 million is requested for FY 1966. . . .

Public Information.

The FY 1966 request includes $4 million for public information activities and for the encouragement of private industrial participation in civil defense activities.

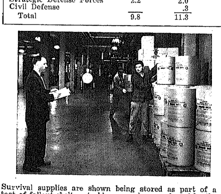
Training and Education.

For civil defense training and education, $15.5 million is requested in FY 1966. . . .

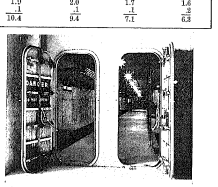
Financial Summary

The Strategic Offensive Forces, The Strategic Defensive Forces and The Civil Defense Program I have outlined will require Total Obligational Authority of $6.3 billion in FY 1966. A comparison with prior years is shown below:

	1962 Orig.	1962 Final	1963 Actual	1964 Actual	1965 Est.	1966 Proposed
		($ Billions, Fiscal Years)				
Strategic Offensive Forces	7.6	9.0	8.4	7.3	5.3	4.5
Strategic Defense Forces	2.2	2.0	1.9	2.0	1.7	1.6
Civil Defense		.3	.1	.1	.1	.2
Total	9.8	11.3	10.4	9.4	7.1	6.3



Survival supplies are shown being stored as part of a test of fallout shelter stocking procedure conducted by the DOD with the cooperation of local Defense Agencies.



Industrial fallout shelter entrance showing water-tight doors and seating and bunking arrangements typical of continuing Civil Defense shelter survey program.

General Purpose Forces

The General Purpose Forces, as in the past, include most of the Army's combat and combat support units, virtually all Navy units, all Marine Corps units and the tactical units of the Air Force. These are the forces upon which we rely for all military actions short of general nuclear war, i.e., limited war and counter-insurgency operations.

The Requirement for General Purpose Forces

While all of our military forces would be employed in a general war, it is primarily the limited war mission which shapes the size and character of the General Purpose Forces.

Army General Purpose Forces

The United States Army, during the last four years, has undergone a major renovation and expansion. . . .

These changes have been so numerous and extensive and have come so fast that we believe the Army now needs a period of time in which to digest and consolidate them. Accordingly, we do not now propose any additional major changes in the Army force structure, except for a further realignment of the Reserve Components to increase their readiness to augment the active Army.

Army Procurement.

As you know, we have made very heavy investments in recent years in building up our stocks of weapons and combat consumables to levels which would permit our forces to engage in sustained combat. Under the logistics guidance which I described to you last year, the Army was to acquire initial equipment for a 22-division force (16 active and six reserve component divisions) plus sufficient combat consumables (attrition of equipment, replacement spares, ammunition, etc.) to maintain 16 divisions and their support forces in combat for the entire period between D-Day and the time when production rates could be built up to match combat consumption (P-Day). Now, with the reorganization of the reserve components, all of the Army National Guard units (including the two special purpose divisions, the separate brigades and other supporting forces) would be included within the force for which we buy weapons, equipment and combat consumables. We have added about $40 million to the FY 1966 request to make a start on filling the most urgent requirements—communications equipment, trucks, etc.

During the past year, we have continued to refine our inventory objectives for specific items of equipment in light of our most recent actual experience and in accordance with the logistics guidance just described. . . .

Our proposals also reflect our determined effort to concentrate funds for equipment modernization on those items which will yield the greatest gain in combat effectiveness. As now adjusted, the FY 1965 program totals about $1.9 billion; the proposed FY 1966 program amounts to about $2.0 billion.

Aircraft.

. . . for FY 1966, we propose only an austere aircraft procurement program, limited to meeting basic requirements which would not be affected by the outcome of the Army's study. A total of $344.5 million has been included in the FY 1966 budget for procurement of 1,018 aircraft (plus drones, spares and repair parts), . . .

Iroquois. Again the largest single item in the category is the purchase of UH-1D (Iroquois) helicopters. The Iroquois is replacing older helicopters and fixed-wing aircraft in the general utility role (e.g., transporting troops, cargo and casualties).

Chinook. . . . $75.2 million is included in the FY 1966 budget for continued procurement of this aircraft.

Light Observation Helicopter (LOH). Contracts for the FY 1965 portion of the light observation helicopter (LOH) program are soon to be awarded. $20.4 million for an additional 168 is included in the FY 1966 request. This new helicopter will be used to replace the older OH-13/23's and the O-1 fixed-wing observation airplane.

Trainer Aircraft. We also propose to procure 10 fixed-wing and 60 rotary-wing trainer aircraft in FY 1966, at a cost of $4.2 million.

Missiles.

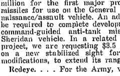
Army procurement of missiles including spares will increase by $19 million, from $235 million in FY 1965 to $254 million in FY 1966.

Pershing. The FY 1966 procurement of Pershing missiles would bring the Army's inventory to 100 per cent of its total inventory objective and provide for annual service practice and tests. During FY 1966, we will again be sharing the Pershing missile production with the Federal Republic of Germany.

Lance. . . . Funds have been included in the R&D request to provide for this development effort in FY 1966.

Anti-Tank Missiles. About $2.7 million is included for the procurement of SS-11 anti-tank missiles.

Shillelagh. The FY 1966 budget also provides $61 million for the first major procurement of Shillelagh missiles for use on the General Sheridan armored reconnaissance/assault vehicle. An additional $4.7 million will be required to complete development and testing of this command-guided anti-tank missile with the General Sheridan vehicle. In a related operational development project, we are requesting $3.5 million for further work on a new stabilized sight for Shillelagh and certain modifications, to extend its range.



Redeye. . . . For the Army, we propose to reprogram $21.8 million this year to start the production program and we request $58.3 million to continue procurement in FY 1966. . . .

Hawk. No additional Hawk or Hercules surface-to-air missiles will be procured in FY 1966. However, we are proposing to reprogram $34 million in order to procure Hawk equipment during the current year. Of this amount, $14 million is required to build up stocks of equipment spares to more adequate levels. We are also requesting about $8 million in FY 1966 for certain high value repair parts and for continuing modifications of Hawk missiles presently in the inventory.

Mauler. No procurement is now anticipated.

Sergeant. The $1.9 million requested for Sergeant is required for warhead adaption kits.

Missile Spares and Target Missiles. About $16.7 million is requested for missile spares. Also included in the total for Army missiles is $6.0 million for target missiles. . . .

Weapons and Combat Vehicles

The $364.2 million FY 1966 request for weapons and combat vehicles is $108 million more than the $256.2 million now budgeted for FY 1965.

20 mm. Gun. We propose to replace the 50 cal. machine gun presently mounted on our M-114 armored command and reconnaissance vehicle with a 20 mm. gun. . . . After evaluating a number of candidates for this requirement, we have tentatively settled on the German-produced Hispano-Suiza. . . . It should be noted that, in view of our agreement with the Federal Republic, there would be no adverse balance of payments implications associated with this transaction since any "additional" expenditures we make in Germany are to be fully "offset" by German procurements from us.

Howitzers and Light Recovery Vehicles. The FY 1966 request provides $26.6 million for additional self-propelled 8-inch howitzers and M-578 light recovery vehicles, which will bring inventory levels for these items up to 100 per cent of the objectives.

General Sheridan. We are also proposing $58.2 million for the initial procurement of General Sheridan armored reconnaissance and airborne assault vehicles which will replace the M-41 light tank and the M-56 self-propelled 90 mm. gun in support of the field Army.

Command Post Vehicles, Cargo Carriers and 81 mm. Mortar. A number of standard tactical vehicles use the same chassis as the M-113 personnel carrier—including the M-577 command post carrier, the XM-548 cargo carrier and the M-125 self-propelled 81 mm. mortar. With the proposed FY 1966 program, we will have procured a large part of the objective for this family of vehicles, except for the 81 mm. self-propelled mortar, which completed development only a few months ago. Therefore, we propose to hold production of the basic chassis to the minimum sustaining rate so as to maintain the production base as long as possible. The FY 1966 increment includes command post vehicles, cargo carriers and 81 mm. mortar carriers at a total cost of $37 million.

M-60 and M-48 Tanks. Sufficient medium tanks (M-60 and M-48) have already been funded to meet our current logistics objectives. For the present, we have decided not to program the M-60, the current medium tank, for areas other than where there is a current or anticipated sophisticated armor threat. Nevertheless, we do wish to maintain, for as long as possible, the options to procure M-60's for other areas, to meet the tank requirements of friendly countries or to expand production quickly if the need arises. In order to maintain a hot production line through FY 1966 funding, we are requesting funds for a substantial number of M-60's. However, we do not expect that this procurement will raise our net total M-60 tank inventory above the desired level, inasmuch as tank sales to friendly countries over the FY 1965-66 period should amount to at least the FY 1966 quantity. The anticipated receipts from these sales have been used to reduce the total funding request for the FY 1966 Army program.

Howitzers. . . . We are also requesting $43 million for self-propelled 155 mm. howitzers.

Tactical and Support Vehicles.

About $315 million is provided in the FY 1966 proposed program for the procurement of almost 62,200 trucks, trailers and other non-combat vehicles, about 22,400 less than the number programmed in FY 1965.

Tactical Trucks. In terms of cost, the more important items in this category are some 40,000 tactical trucks for which about $253 million has been requested. . . .

Communications and Electronics.

We are requesting $240.1 million for the procurement of communications and electronics equipment in FY 1966. . . . Procurement for the Army Strategic Communications System, STARCOM, shows a substantial decrease in FY 1966—$46 million compared to $59 million in FY 1965.

Radios and Communications Equipment. About $84.5 million is requested for procurement of radios, with the AN/VRC-12 vehicular radio being the largest single item in terms of cost. Also included in our proposed FY 1966 program is about $14.3 million for the purchase of communications equipment. . . .

Ammunition

The FY 1966 request of $344.9 million is about $73 million more than the current year's level, although about the same as FY 1964 and FY 1963.

The largest single item, $44.6 million, is for the continued procurement of 155 mm. high explosive howitzer projectiles. We also propose continued procurements of several varieties of 105 mm. ammunition. For the 20 mm. gun previously mentioned, we propose to procure about $16 million worth of ammunition. Concurrently, we propose to establish a production facility in this country for this ammunition.

Other Support Equipment.

We are requesting $107.7 million for other support equipment. . . . These funds will be used for such items as electric field generators, road graders, cranes, tractors, bridge components, shop equipment, fork lift trucks, etc.

Production Base Program.

The $65.4 million requested for production base support is somewhat less than the amount programmed for FY 1965.

Navy General Purpose Forces

During the past year we have continued our analysis of Navy General Purpose Forces requirements. . . . We now believe that some changes should be made in the programs which I presented to the Committee last year. Although there are still important uncertainties, we now find ourselves . . . to be generally in better shape than we previously thought with regard to anti-submarine warfare. Further improvements, however, are needed in the fleet's air defense and mine-clearing capabilities.

The fleet air defense problem is not new. Last year I . . . described the programs we were undertaking to improve further the existing ship-to-air missile systems (Tartar, Terrier and Talos), to develop a new standardized missile to replace Tartar and Terrier and to study a completely new ship-to-air missile system for the 1970's. These efforts are now well along.

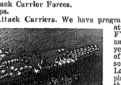
The existing ship-to-air missile systems have been substantially improved in the last two and a half years. The "kill" probability and readiness rate of Terrier have been increased by a factor of two; similar, though less spectacular, improvements have been achieved in the case of both Tartar and Talos. The new standardized missile is well along in development and we plan to buy a number of missiles in FY 1966 for operational test and evaluation. The standardized missile, which uses the same launching systems, will gradually replace the Tartar and Terrier missiles on existing ships. . . .

Another general problem concerning the Navy's General Purpose Forces relates to the use of nuclear power for surface ships. As I stated last year, the key to solving this problem is the availability of a more economic power plant. Last summer the President approved the development of a new reactor, two of which could power an attack carrier. . . . The extent to which this new reactor would reduce the cost of a nuclear-powered attack carrier has yet to be determined, but I am hopeful that it will enable me next year to request the application of this reactor to the new carrier we tentatively plan to start in FY 1967. . . .

In total, we have planned a force of 868 Navy general purpose ships for end FY 1966, compared with 833 at end FY 1964.

Attack Carrier Forces.

Ships.



Attack Carriers. We have programmed a force of 15 attack carriers through FY 1969, the same number planned last year; however, the mix of carriers will be somewhat different. Last year we had planned to keep all three Midway-class carriers in the force, unchanged. We now propose to modernize two of these carriers, the Midway and the F.D.R. (The third Midway-class ship, the Coral Sea, has already been modernized.) The Midway will undergo modernization beginning in FY 1966. The F.D.R. will undergo modernization later. . . . The cost of modernizing both ships will be about $167 million. We are reprogramming $14.0 million in FY 1965 funds to procure long lead time items, and $70.3 million is included in the FY 1966 budget. It should be noted, however, that these costs will be largely offset by savings in aircraft procurement and operating costs. . . .

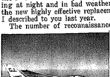
Carrier Aircraft.

The air complement of the attack carrier force currently consists of 15 carrier air groups and two replacement pilot training groups. You may recall I said last year that:

". . . Because of its greater endurance, longer radar and missile range, . . . the F–111B should offer a substantial increase in effectiveness over the F–4B and may replace them on less than a one-to-one basis."

A recent study of tactical air power concluded that the F–111B armed with the new Phoenix promises such large gains in combat effectiveness that, if the promises are realized, perhaps only one squadron will be required per carrier instead of one squadron of F–111B's plus one squadron of F–4's. . . .

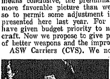
We will continue to buy two types of attack aircraft, the A–6A which is especially designed for low-level bombing at night and in bad weather, and the A–7A (VAL), the new highly effective replacement for the A–4E which I described to you last year.



The number of reconnaissance aircraft in the carrier forces will also continue to increase over the next few years, reflecting the growing importance of this function. The program will provide six RA–5C's per Forrestal-class carrier. We have also included nearly $9 million in the FY 1966 budget to complete the project for extending the life of the RF–8A's, which will continue to be used aboard Essex and Midway-class carriers. . . .

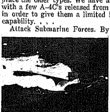
ASW—Surveillance and Ocean Patrol Forces.

. . . the Navy has completed the first phase of a comprehensive study of anti-submarine warfare. Although I do not consider the work completed to date by any means conclusive, the preliminary results do present a more favorable picture than we had before, sufficiently so to permit some adjustment in the ASW programs I presented here last year. For a number of years we have given budget priority to new ASW ships and aircraft. Now we propose to give priority to the acquisition of better weapons and the improvement of sensors.



ASW Carriers (CVS). We now have nine CVS's, all Essex-class. These ships are still highly serviceable as ASW carriers, since they have the speed, range and space required for all ASW weapon systems now current or likely to be developed in the next few years. . . .

The ASW carrier forces will continue to be equipped with both fixed-wing and helicopter aircraft. We are now buying the S–2E long range search aircraft for the fixed-wing requirement and the SH–3A for the helicopter. As these aircraft are delivered they will replace the older types. We have also provided each carrier with a few A–4C's released from the attack carrier forces in order to give them a limited intercept and air defense capability. . . .



Attack Submarine Forces. By the end of the current fiscal year, the submarine forces, excluding Polaris, will number 104 ships including 23 nuclear-powered. . . .

How many submarines will be required in the future and how many should be nuclear-powered is not yet clear. By the end of the next fiscal year, we will have a total of 105 and we plan to maintain that general level through the program period. A total of 50 SSN's has already been funded (excluding the Thresher which was lost), and four more are included in the FY 1966 budget. . . .

Destroyer Escorts. There are now 23 destroyer escorts in the fleet. The first of the six DEG's (destroyer escorts armed with the Tartar missile), funded in FY 1962 and FY 1963, will be delivered to the fleet in early FY 1966. All six should be delivered by end FY 1967. A total of 55 DE's has been funded through FY 1965. . . .

Last year we cancelled our plan to convert 13 DD–931-class destroyers to Tartar missile ships for reasons which I have already discussed. All of these ships are less than nine years old, and they are fast enough to escort attack carriers. In their present configuration, however, they lack a standoff weapon and other modern ASW equipment. We can provide these ships with ASROC, improved communications equipment, a new variable-depth sonar and improved ECM capabilities plus certain minor structural modifications, at a cost of about $12 million each. With these improvements, the DD–931-class destroyers would be comparable to, or even better in the ASW role than, the DE's we are now building at the cost of about $27 million each. Accordingly, we have included $60 million in the FY 1966 budget for the first five of these conversions; eight more are scheduled for subsequent years. . . .

Patrol Craft. Subsequent to the enactment of the FY 1965 Defense Appropriations Bill, we requested approval to reprogram $7.9 million of FY 1965 funds to procure two hydrofoil patrol boats (PGH). This reprogramming action was not approved by all of the Committees involved. Instead, the Department was instructed to include the two PGH's in its FY 1966 budget, which we have done. In addition, the FY 1966 budget includes the ten patrol craft previously tentatively scheduled for procurement in FY 1966, making a total of 12. . . .

Multi-Purpose Ships.

There will be 263 ships which possess capabilities for both anti-submarine warfare and fleet air defense in the fleet at the end of the current fiscal year, the bulk of which will be destroyer types. A number of these ships—cruisers, frigates and destroyers—will have a guided missile capability. Seven guided missile frigates will be added to the fleet in FY 1966, including the nuclear-powered Truxton.

Truxton. . . . We now plan to program for surface ship modernization and for the development of the new missile system more than $900 million over the FY 1966-70 period, $54.6 million in FY 1966 for R&D alone. . . .

Tartar and Terrier Missiles. Another $108 million has been programmed in the FY 1963-65 period to improve the missiles themselves, and $39.6 million more is included in the FY 1966 budget to continue this work. As part of this effort, known as the SAM Improvement Program, we have undertaken the development of a new "standardized" missile for use with both Tartar and Terrier launchers. This new missile is being designed to achieve higher reliability with less maintenance, to provide a greater capability at a smaller cost per missile than either the Tartar or Terrier.

To provide for better fleet air defense in the 1970's, the Navy is currently studying an Advanced Surface Missile System (ASMS). Over $8 million is being spent this year, and $12 million is included in the FY 1966 budget to complete a project definition phase and to initiate systems development if it proves to be feasible. . . .

The first Terrier missile ships authorized—two heavy cruisers, three light cruisers and four frigates—were fitted with a system based on the beam-riding principle. Beginning this year, and continuing over the next few years, we propose to refit the four frigates and two heavy cruisers (at a cost of $201 million) with the more modern and effective Terrier homing system. . . .

Mine Warfare Forces.

The mine warfare force proposed for the FY 1966–70 period is essentially the same in size as that presented to the Committee for the past two years. . . . Additional new minesweepers (MSO's) will be constructed in FY 1966–

1968 (four in FY 1966) as replacements for older ships (MSC's) and one Liberty ship will be converted in FY 1966 to a Minesweeper Special (MSS). . . .

Amphibious Assault Ships.

. . . Our studies this year confirm that this revised program will significantly increase our amphibious lift and expand our helicopter vertical assault capability, provide for an orderly replacement of World War II ships and improve response time. A total of 15 ships is planned for construction in FY 1966 at a cost of $494 million.

In order to provide increased ship-to-shore firepower to "cover" the landing forces during an amphibious assault, we propose to reactivate during FY 1966 three Medium Landing Ships, Rocket (LSMR) and one Inshore Fire Support Ship (IFS) now in the reserve fleet. In addition, we now plan to retain in the fleet two Heavy Gun Cruisers (CA) which had previously been scheduled for deactivation. . . .

Logistic, Operational Support and Direct Support Ships.

. . . We are proposing construction of seven logistical and operational support ships in FY 1966 at a cost of $259 million, one less than planned last year. Construction of one of the two fast supply ships (AFS) previously included in the FY 1966 program has now been deferred to a later year, thereby leveling out the rate of construction.

In addition to the proposed ship construction program, we are also requesting $7.1 million in FY 1966 for the procurement of UH–46A helicopters. . . .

We also plan to construct two direct support ships in FY 1966, one Submarine Tender (AS) and one Destroyer Tender (AD), at a cost of about $117 million, to replace older, less effective ships. . . .

Marine Corps Forces.

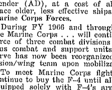
During FY 1966 and throughout the program period, the Marine Corps . . . will continue to maintain an active force of three combat divisions and three aircraft wings plus combat and support units. The Marine Corps Reserve has now been reorganized to provide a fourth division/wing team upon mobilization. . . .

To meet Marine Corps fighter requirements we will continue to buy the F–4 until all 15 fighter squadrons are equipped solely with F–4's armed with Sidewinder and Sparrow air-to-air missiles. We will begin to replace older Marine Corps F–4's with the newer models when they are released from the Navy as the F–111B becomes available.

For the attack squadrons, we will continue to buy the A–6A to provide the Marine Corps with an all-weather, close-air support and interdiction capability. We also plan to make our first buy of the new A–7A (VAL) aircraft for the Marine Corps in FY 1966.

. . . The first of the new RF–4B's will begin replacing the obsolescent RF–8A's in FY 1966. . . .

For the vertical envelopment mission, we are buying large quantities of CH–46A medium helicopters, a tandem rotor, twin turbine-powered helicopter with a normal payload of 4,000 lbs. or 17 men. . . . We are also buying smaller quantities of the CH–53A all-weather cargo and troop transport helicopter. First deliveries of the CH–53A will be made in FY 1966. . . .



Navy and Marine Corps Aircraft Procurement.

We propose to buy a total of 659 aircraft of all types in FY 1966 (at a cost of $1,545 million) to continue the modernization of the Navy and Marine Corps aircraft inventories.

To meet the fighter requirements of both the Navy and the Marine Corps, we will continue to procure the F–4, but at a lower level than in FY 1965. . . .

Last year we planned to procure our first increment of F–111B's in FY 1966. We have, however, encountered some development problems with the Phoenix missile. Since the system must be incorporated into the airplane, we have had to slip the aircraft production schedule and reduce the FY 1966 buy. Despite the delays in the Phoenix, we still plan for the first squadron of F–111B's to be operational on the previously scheduled date.

We are proposing to make our first major procurement of the A–7A in FY 1966 and we will continue to buy this aircraft over the next several years. Funds are also included in the FY 1966 budget for the continued procurement of the A–6A at the same level as in FY 1965.

. . . The E–2A program was initiated eight years ago in FY 1957, but the very difficult technical problems involved have yet to be solved. Because it is an important program, we believe it should be continued, but at a slower rate. We now propose to keep the production line going while we continue our efforts to solve the problems. Production of aircraft funded in FY 1963-1964 will be stretched over a longer period, leaving a smaller number of aircraft to be funded in FY 1966. $106 million of the $176 million provided for FY 1965 will be applied to the aircraft authorized through FY 1964, making a total through the current fiscal year of $970 million (including R&D). The remaining $70 million has been applied against the FY 1966 budget. The FY 1966 E–2A program will require $123.6 million in TOA—$121.2 million for aircraft and $2.4 million for continued development effort. . . .

As I indicated earlier, we intend to increase the number of patrol squadrons from 29 to 30. In addition, to make the P–2 available for the reserve forces and to modernize the 30 squadron force generally, we now propose to procure more P–3A aircraft than previously planned.

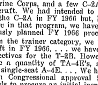
The FY 1966 budget also includes a total of 140 CH–46A, UH–46A and CH–53A helicopters for the Navy and Marine Corps, and a few C–2A carrier-on-board delivery aircraft. We had intended to complete our procurement of the C–2A in FY 1966 but, because of the recent slippage in that program, we have deferred part of our previously planned FY 1966 procurement.

In the trainer category, we propose to procure 91 aircraft in FY 1966. . . . we have reduced our procurement objectives for the T–2B. However, we now plan to procure a quantity of TA–4E's, a two-seat modification of the single-seat A–4E. . . . We have already reprogrammed with Congressional approval $58.5 million of FY 1965 funds to procure an initial increment of the TA–4E. $57.6 million is included in the FY 1966 budget for the second increment.

Other Navy Procurement.

. . . we are requesting about $761 million for Navy missiles, ordnance, ammunition and other combat consumables—an increase of about $114 million over the amount provided last year. . . .

Sidewinder and Phoenix Missiles. For the Sidewinder I–C (IRAH) missile, our objective is to keep a production line going until the new Phoenix missile begins phasing in. To accomplish this objective we plan to level off production at a rate which can keep the line going through the FY 1966 procurement period using FY 1965 and prior year funds. $71 million has been included in the FY 1966 budget to continue development of the Phoenix missile.



Tartar and Terrier Missiles. In addition to the Tartars and Terriers included in the FY 1966 procurement program, we plan to buy the first increment of the new "standardized" Tartar/Terrier missile which I mentioned before. These missiles will be used for test, evaluation and documentation. All future Tartar and Terrier procurement will be of the standardized model.

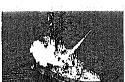
Talos. Funds are also included in the FY 1966 budget for the continued procurement of Talos.

Snakeye, Walleye and CBU-3. The current year's program for air-to-surface ordnance originally included Bullpup B short range supersonic tactical missiles. However, we now propose to cancel this buy since the Navy feels that assets accumulated through FY 1964 and previous procurements are sufficient, particularly in view of the substantial procurements now being made of the newer Snakeye, Walleye and CBU-3. The FY 1966 budget includes additional funds for the procurement of these three weapons.

MK-46. As I have pointed out in prior years, one of our most pressing needs in the ASW area is more modern weapons. In FY 1966 we propose to buy a large number of the new MK-46 light weight ASW torpedoes. . . .

SUBROC. The 1966 budget includes over $23 million for for SUBROC procurement. . . .

Sonobuoys. We have also included funds for increased procurements of sonobuoys—Julie, Jezebel, etc. We have already achieved 100 per cent of the inventory objective for Julie and are now buying for peacetime consumption.



ASROC and DASH. We will continue to procure substantial quantities of ASROC. . . . The FY 1966 increment will bring stocks to 100 per cent of the objective. Nearly $47 million is also included for procurement of DASH drone ASW helicopters. . . .

Expendable Ordnance. Recent, more detailed analysis . . . has caused us to increase our inventory objectives for three inch and five inch ammunition for ship guns. About $31 million has been included in the FY 1966 budget for these rounds. . . .

Procurement of expendable ordnance will be about $125 million above FY 1965.

Electronics Procurement. . . . Among the items being procured will be AN/SPS-48 three-dimensional radars (at a cost of $7.1 million). . . . We also propose to continue procurement ($21.6 million) for the Navy Tactical Data System. The Navy will also undertake an extensive program of in-service modification of existing sonars as part of the overall effort to raise ASW capabilities—at a cost of $20 million in FY 1965 and $33 million in FY 1966. In addition to improvements in AAW and ASW electronics equipment, the Navy has included $57 million in its FY 1966 procurement request for the second increment of its shipboard communications modernization program which I mentioned last year. . . . The Navy will also procure shipboard satellite terminals ($3 million) for use in connection with the Defense Communication Satellite Program.

Nearly $19 million is included in the FY 1965 Navy program for the procurement of automatic data processing equipment and an additional $6.8 million of equipment will be procured in FY 1966. Resultant reductions in rental costs are estimated at $1.6 million in FY 1965 and $5.4 million per year thereafter.

Marine Corps Procurement.

. . . A total program of $118.4 million is recommended for Marine Corps procurement in FY 1966, somewhat less than was provided for FY 1965. . . .

Ammunition. For 7.62 mm. ammunition, $5.0 million is requested. About $27.1 million is proposed for other ammunition and ordnance equipment, primarily for peacetime training.

Redeye. . . . For the Marine Corps, we propose to reprogram $10.0 million this year to begin procurement, and we are requesting $8.7 million in our FY 1966 budget to procure additional missiles.

Support Vehicles. The FY 1966 budget also includes about $25.6 million for the procurement of support vehicles, including 740 two and one-half ton and 600 five-ton trucks. $6.5 million is also included for the procurement of large amphibious assault fuel systems to support both the ground and aviation units of the landing force.

Communications Equipment. In the electronics category, the Marine Corps would buy, in FY 1966, a variety of radar, radio and other communications equipment including the new AN/TLG-17 electronic countermeasures set and the PRC-25 radio.

Air Force General Purpose Forces

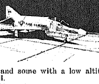
Because of the critical importance of tactical airpower to our position in Europe, we have made a major effort during the last four years to expand and modernize the Air Force General Purpose Forces and provide them with the wartime stocks needed for sustained non-nuclear combat. These objectives have been substantially attained. The chief remaining shortcoming is the excessive vulnerability of our forces overseas to conventional attack and we are again proposing a solution to that problem.

Tactical Fighter Forces.

We are continuing to program towards a tactical fighter force of 24 wings, the same size force we planned a year ago. However, I now believe we can prudently plan on a somewhat slower rate of modernization than we envisoned then.

The F-4 has proved to be a fine high performance, versatile aircraft; nevertheless, we do pay a price for this versatility and we should not buy more of these aircraft than we are likely to need. Based on our continuing study of tactical air power requirements and the great increases in capability, both realized in recent years and projected for the future, we now propose to reduce the tentative F-4 force objective by two wings. . . .

It is too early to project the ultimate F-111 force level and our objective for this aircraft is still tentative. . . .



With respect to Air Force tactical fighters, we will continue to procure the F-4 but at a lower level than in the current fiscal year. $395 million has been included in the FY 1966 budget for this aircraft. As I described last year, we are providing some of the later model F-4's with an improved air-to-ground attack capability and some with a low altitude intercept capability as well.

About $679 million has already been provided for the development of the F-111 and $205 million is included in the FY 1966 request. Last year, $146 million was provided for procurement of the first ten aircraft together with certain long lead time components. For FY 1966, $404 million is requested to continue procurement.

Tactical Bombers.

The two B-57 squadrons (48 UE aircraft), scheduled last year for transfer to the Air National Guard, were instead deployed for temporary use in Viet Nam. We now plan to retain these aircraft in the active force for as long as they are needed in Southeast Asia. . . .

Tactical Reconnaissance Forces.

No major changes are presently contemplated in the tactical reconnaissance force levels proposed last year although there have been some slippages and cost increases. The RF-4C program has continued to encounter delays and cost increases, resulting in a reduction of the FY 1964 and FY 1965 procurement programs. The $236 million requested for the RF-4C in the FY 1966 budget would make up those reductions and provide sufficient aircraft to enable us to maintain the planned force. . . .

KB-50 Tankers.

Last year we had planned on keeping one squadron of KB-50 tankers in the active force through the end of the current fiscal year. These aircraft, however, have proved very difficult to maintain in a safe operating condition and we decided to phase them out this year. KC-135 aircraft of the Strategic Air Command will be used to meet the tactical requirements for tanker support.

Special Air Warfare Forces.

The Special Air Warfare Forces at the end of the current fiscal year will reflect an increase over FY 1964. These forces presently include such aircraft as the B-26, the T-28, the A-1E, the C-46, the U-10 and the C-123. We plan to continue a force of approximately this size and composition throughout the program period. . . .

We have presently under development a new counter-insurgency aircraft called LARA (light armed reconnaissance aircraft) which will be optimized for lower orders of conflict where the requirement for transport dominates the need for fire power. . . .

Other Air Force Procurement.

Shrike. We have included in our FY 1966 budget request a total of $328 million for tactical non-nuclear ordnance (including $162 million for Special Air Warfare Forces), compared with $234 million for 1965 (including $76 million for Special Air Warfare Forces). Only about $106 million worth was procured in 1961. Included in the FY 1966 request is another increment of the anti-radar missile Shrike. . . .

Bullpup. Recent air-to-surface ordnance studies have revealed that Navy and Air Force stocks of Bullpup-A missiles presently exceed our likely needs. Therefore, rather than procure complete Bullpup trainer missiles for the Navy and Air Force, we will buy only the trainer inert center section for use with these excess Bullpup-A's. This will produce a net saving of $8.2 million in the current fiscal year. For FY 1966, 8,000 inert sections for these missiles will be bought at a cost of $1.2 million (compared with a cost of $9.4 million for 3,825 complete training missiles).

Snakeye. The Air Force will also buy $41 million of Snakeye 500 pound bombs in FY 1066. . . .

Theater Air Base Vulnerability.

As I noted at the beginning of this discussion of the Air Force General Purpose Forces, our most urgent need in this area is to reduce the vulnerability on the ground of our tactical aircraft deployed on bases overseas. . . .

With respect to the aircraft themselves, an earth-covered, steel shelter equipped with an armor-plate door has proved fully effective against strafing, napalm and fragmentation weapons and against near misses by all other types of non-nuclear weapons. These shelters would cost only about $110,000 each, a very small fraction (five to seven per cent) of the value of the aircraft they protect. The $22 million requested for the Air Force for FY 1966 would provide for that Service's highest priority requirements. In addition, we are requesting funds for a small number of shelters for Marine Corps aircraft.

Our analyses also underscore the present vulnerability of our deployed tactical air power to enemy attacks on the runways of our forward bases. . . . To meet this problem, the FY 1966 program provides about $5 million for the necessary equipment and material to create a rapid runway repair capability. . . .

Tactical Exercises.

Tactical exercises for elements of the General Purpose Forces, as I noted last year, serve many important objectives. . . .

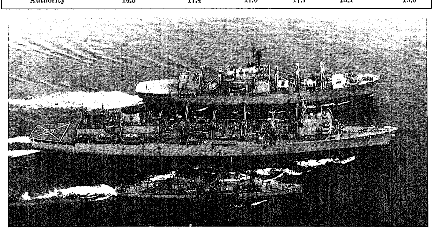
For FY 1966, we again plan an extensive program of such exercises at an estimated cost of $136.9 million, compared with $110 million estimated for the current year.

Last July, I requested the Joint Chiefs of Staff to establish a joint task force to conduct tests of the penetration capabilities of our tactical and strategic aircraft and of our anti-air defensive systems. Joint Task Force Two has been formed and is now being manned. . . . Starting early in 1965 and continuing thereafter, JTF-2 will conduct comprehensive tests of existing and new tactical aircraft, weapons and ordnance, including penetration against all forms of air defense weapons. About $6 million has been included in the 1966 budget for the support of this effort.

Financial Summary

The General Purpose Forces Program, which I have outlined above, will require Total Obligational Authority of $19.0 billion in FY 1966. A comparison with prior years is shown below:

	1962 Original	1962 Final	1963 Actual	1964 Actual	1965 Estimated	1966 Proposed
			($ Billions, Fiscal Years)			
Total Obligational Authority	14.5	17.4	17.6	17.7	18.1	19.0



The USS Sacramento (AOE-1), the first in a new class of large multi-purpose stores ships designed to accompany fast task forces, providing fuel, ammunition, missiles and general cargo. Sea Knight helicopters are aboard to provide airlift capability for a new concept of "Vertical Replenishment."

Airlift And Sealift Forces

I believe that it is apparent from my discussion of the limited war problem and our General Purpose Force requirements that an adequate airlift and sealift capability is essential to our global strategy in the collective defense of the Free World. Included in the airlift forces which I will discuss in this section of the statement are the MATS transports, the Air Force Tactical Air Command troop carrier aircraft, and the transport aircraft in the Air Force reserve components. The sealift forces include the troop ships, cargo ships and tankers operated by the Military Sea Transportation Service and the "Forward Mobile Depot" ships.

Ths Requirement

. . . it is clear that to meet the requirements for rapid movement of our forces, we need a new, very large capacity airlift aircraft and new "fast deployment" ships . . . .

Transport Aircraft.

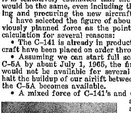
Last year, I informed the Committee that we were studying the development of a new large transport aircraft, the CX–HLS (now called the C–5A). We were thinking then of a large aircraft in the 600,000 lb. class . . . with about 2,300 sq. ft. of loadable floor area using six of the C–141-type engines. We now believe that we can design an even more efficient and economical transport in the 725,000 lb. class, using four newly developed engines. This aircraft would be 15 per cent cheaper per ton/mile to operate than the model I described last year . . . and would have the same rapid loading and unloading drive-through features plus the ability to operate from short, low strengh airfields. Our studies during the last year have convinced us that unless troops and equipment can be routinely delivered well forward in the theatre of operations, many of the advantages of airlift would be lost. . . .

Even though the C–5A would be very expensive to acquire—$2.2 billion (including development and procurement) for a modest force of operational aircraft on a ten year systems cost basis (i.e., including the cost of development, procurement and ten years of operation)—the C–5A would be a much better buy than additional C–141's.

Our calculations show that it would be desirable to reduce the previously planned C–141 force by about one-third, and substitute C–5A's. The C–5A's would provide about the same capability as the replaced C–141's. Further, it is tentatively estimated that the ten year systems cost would be the same, even including the high cost of developing and procuring the new aircraft.

I have selected the figure of about two-thirds of the previously planned force as the point of departure for this calculation for several reasons:

- The C–141 is already in production. A total of 145 aircraft have been placed on order through FY 1965 funding.
- Assuming we can start full scale development of the C–5A by about July 1, 1965, the first operational aircraft would not be available for several years. We should not halt the buildup of our airlift between now and the time the C–5A becomes available.
- A mixed force of C–141's and C–5A's would be desirable in any event since a variety of vehicles with different capacities more nearly produce a uniform matching of capabilities and requirements. The C–141 could carry the denser cargo, thus making fuller use of its payload potential, while the C–5A could carry the bulky cargo. Furthermore, there will always be trips which will not require the very large capacity of a C–5A.



Ships.

Last year I informed the Committee that we were studying a new type of roll-on/roll-off ship which promised perhaps twice the capacity, greater speed and lower procurement and operating cost than the Comet-type ships we now have in the program . . . .

These ships would be powered by a new propulsion system consisting of a marine version of an aircraft-type gas turbine engine coupled to an electric generator/motor . . . .

Such a ship would be particularly useful for carrying, without disassembly, heavy wheeled and tracked vehicles as well as helicopters. Its relatively high speed would permit it to deliver cargo within the critical first 30 days, even from the continental U.S. to a distant area. We propose, however, to use these ships as Forward Mobile Depots stationed close to potential trouble areas and in no event for carrying peacetime cargoes . . . .

Although the ultimate mix of ships and aircraft has yet to be determined, the addition of a number of these fast deployment logistic ships and several squadrons of C–5A aircraft to the airlift-sealift forces should give us the capability to deploy large ground forces to distant areas. Accordingly, we propose to move forward both with the C–5A and the new fast deployment logistic ship programs.

Airlift

Last year I told this Committee that we planned to undertake a number of studies to determine the characteristics of the CX. . . . We now propose to reprogram an additional $35 million from available FY 1965 funds to complete a very thorough and highly competitive project definition phase. . . . Another $157 million has been included in the FY 1966 budget for full scale development. The pacing components are the new power plant and the "high flotation" landing gear.

Additional C–141 aircraft will be procured in FY 1966 at a cost of $400 million and the final quantity will be bought in FY 1967 . . . .

Sealift

The major change in the sealift program is the decision to go ahead with the construction of the new class of fast deployment logistics ships . . . .

Having completed our analyses, we now propose to start four of the new type fast deployment logistics ships in FY 1966 and have included $131.8 million in our budget request for this purpose . . . .

Since the new force of fast deployment ships would not be available for some years, we propose to convert more Victory's to forward mobile depots in FY 1966 and $29.6 million has been included in our budget request for that purpose . . . .

Although the tanker force will remain at 25 throughout the program period, we propose to increase the modernization program . . . . Last year we had planned to rehabilitate and lengthen four of these tankers, two in FY 1965 and two in FY 1966, and funds were requested and appropriated for the 1965 program. We still propose to convert two tankers in FY 1966 and, in addition, we have now programmed some more conversions in later years.

Our increasing dependence on airlift will undoubtedly require greater POL storage capacity in forward areas and increase requirements for tanker resupply . . . . To bring all of the major bases up to the desired on-hand level will require a long range program of construction and improvements. I have included $11 million in our FY 1966 military construction budget request for the first increment of this program . . . .

Financial Summary

The Airlift and Sealift Forces I have outlined will requirs Total Obligational Authority of $1.6 billion in FY 1966.

($ Billions, Fiscal Years)

	1962 Original	1962 Final	1963 Actual	1964 Actual	1965 Estimated	1966 Proposed
Total Obligational Authority	.9	1.2	1.4	1.3	1.5	1.6

Research and Development

Included in this major program are all the research and development efforts not directly identified with elements of other programs. In my discussion of the mission-oriented programs—Strategic Offensive and Defensive Forces, General Purpose Forces, etc.—I have already discussed a number of the R&D projects. At this point I would like to round out in a more systematic fashion the contents of the R&D program. . . .

Within the Defense Department, the research and development program may be divided into five significant steps:

- Research—the effort directed toward the expansion of knowledge of natural phenomena and our environment, and the solution of problems in the physical, biological, medical, behavioral, social and engineering sciences.
- Exploratory Developments—the effort directed toward the expansion of technological knowledge and the development of materials, components, devices and sub-systems which it is hoped will have some useful application to new military weapons and equipment. Here the emphasis is on exploring the feasibility of various approaches to the solution of specific military problems, up to the point of demonstrating feasibility with "breadboard" devices and prototype components and sub-systems.
- Advanced Developments—the effort directed toward the development of experimental hardware for technical or operational testing of its suitability for military use, prior to the determination of whether the item should be designed or engineered for actual Service use. Here is where we begin to identify each project with a specific military application or technique, and we begin to question in depth its potential military utility. During this phase we also begin to explore the costs of the most likely applications in order to determine whether the potential operational benefit would be worth the cost of development, production and deployment.
- Engineering Developments—the effort directed toward the development of a particular system engineered for service use and for operational employment, but which has not as yet been approved for production and deployment. It is at this point that large commitments of resources must be made to single projects. Accordingly, before full-scale development is initiated, the specific operational requirements and the cost effectiveness of the system must be confirmed, and goals, milestones and time schedules must be established.
- Operational Systems Developments—the effort directed toward the continued development, test, evaluation and design improvement of projects which have already entered (or have been approved for) the production-development stage.

The first three steps—Research, Exploratory Developments and Advanced Developments—constitute the area of new technology formation. The last two—Engineering Developments and Operational Systems Developments—cover the area of development, test and evaluation of specific new weapons systems and equipment. . . .

While research and exploratory developments do not necessarily have to be directly related to specific military requirements, a full scale engineering development or operational systems development can be justified only in terms of its potential contribution to our strategy, considering both its cost and its military effectiveness, as well as the relative cost/effectiveness of other alternatives. All too often in the past systems development work was started before consideration had been given to how the proposed weapon system would be used, what it would cost and, finally, whether its contribution to our military capability would be worth its cost.

Now before we embark on a major new weapon system development, we first conduct what we call pre-project definition studies. This is the phase during which we, together with our contractors, do our thinking and planning. These studies not only permit us to define the program more clearly, assess the technical risks and determine the estimated costs and time schedule before we finally commit ourselves to a specific full scale development, but they also help us determine how well a proposed system might contribute to the attainment of our military objectives. Most new developments promise, if successful, to achieve a capability that can also be achieved in other ways. Thus, it has always been true that the urgency of most projects is not so great as to prevent the employment of a measured and orderly approach to development and production. More important is the fact that, in most cases, careful and comprehensive prior planning saves time as well as money and results in more effective and dependable weapons.

This is not to say that we can wait until the requirement for a new weapon system is already upon us. The lead time from the initiation of engineering development to the operational deployment of a system is entirely too long to permit such an approach. We must, in fact, anticipate our requirements far into the future. However, in doing so, we must recognize that the further into the future we project our planning, the greater the uncertainties become. And these uncertainties involve not only the future course of technological progress but also what our adversaries may or may not do. Therefore, in certain critical areas we must develop major weapons systems even though we are not sure that they will ever be deployed, or that a military requirement will actually emerge. . . .

Nuclear Testing and Test Detection

As I pointed out last year, the Defense Department has committed itself to four specific safeguards with relation to the test ban treaty.

- The conduct of comprehensive, aggressive and continuing underground nuclear test programs designed to add to our knowledge and to improve our weapons in all areas of significance to our military posture for the future.
- The maintenance of modern nuclear laboratory facilities and programs in theoretical and exploratory nuclear technology which will attract, retain and ensure the continued application of our human scientific resources to these programs on which continued progress in nuclear technology depends.
- The maintenance of the facilities and resources necessary to institute promptly nuclear tests in the atmosphere should they be deemed essential to our national security or should the treaty or any of its terms be abrogated by the Soviet Union.
- The improvement of our capability, within feasible and practical limits, to monitor the terms of the treaty, to detect violations and to maintain our knowledge of Sino-Soviet nuclear activity, capabilities and achievements.

This is, of course, a Joint Department of Defense-Atomic Energy Commission program. For the Defense Department's portion of this program for FY 1966, we have budgeted a total of $243.2 million. . . .

In support of the first safeguard, underground testing, we have included $28.5 million in the FY 1966 budget. . . .

In support of the second safeguard, maintenance of laboratory facilities and programs, our FY 1966 budget includes $53.0 million for nuclear weapons effects research and the Department of Defense's share of the cost of research, development, test and evaluation associated with nuclear weapons development. . . .

With respect to the third safeguard, maintenance of standby atmospheric test capability, we have budgeted approximately $47 million in FY 1966. . . .

In support of the fourth safeguard, the monitoring of Sino-Soviet actions, we have included a total of $114.5 million in the FY 1966 budget. . . . Two principal programs support this safeguard, the ARPA-VELA (Nuclear Test Detection) program and the Atomic Energy Detection System. . . .

Space Development Projects

While the various elements of the Defense Department's space effort are spread, on a functional basis, throughout the program and budget structures, I believe this effort can be more meaningfully discussed as a separate entity.

The Defense space program, however, is an integral part of the much larger National Space Program, expenditures for which, as I noted earlier, now total about $6.5 billion a year. Without question this is the largest single scientific and technological endeavor ever undertaken by the American people. It will influence the course of science and technology and, therefore, our national security programs, for decades to come.

The Defense portion of this national program is designed (1) to explore the use of the space environment for military purposes, (2) to complement the work of NASA and other Government agencies in those fields in which the Defense Department has already achieved a high degree of technical competence and (3) to explore the usefulness of manned space systems for military purposes . . . .

I have laid down two fundamental criteria which the Defense space effort must meet. First, it must mesh with the efforts of NASA in all vital areas; that is, the Defense and NASA programs taken together must constitute a single, integrated national program. Second, projects supported by the Defense Department must hold the distinct promise of enhancing our military power and effectiveness.

With respect to the first criterion, we have established with NASA a large number of joint studies including the reviews of the launch vehicle program, manned earth orbital vehicles, communication satellites, weather satellites, instrumentation networks, control centers, etc. As a result, several formal agreements have been concluded—on research and technology exchange, satellite geodesy, gravity gradient tests, etc. The Aeronautics and Astronautics Coordination Board is the principal agency for effecting this coordination but key officials of both agencies meet very frequently to discuss and work out matters of common interest.

Thus, the Defense Department's program will continue to provide, together with the programs of other agencies of the Government, a broad base of technology and experience to permit the timely development and exploitation of space systems and capabilities which may be needed in the future, recognizing that lead times in certain areas such as manned military space operations may be ten years or longer. Speaking broadly, about one-half of the Defense space effort is directly associated with the unmanned military uses of space discussed above, while the other half is devoted to the creation of technology for future applications, i.e., exploratory and advanced developments. We can be sure that new discoveries and developments growing out of this effort will eventually open up entirely new applications and capabilities which cannot now be clearly foreseen. At the same time we pursue those efforts whose military applications are evident, we must also insure against an uncertain future by continuing to create a foundation of space technology, knowledge and experience which is sufficiently broad to provide for future applications as they materialize and are identified.

In total, we estimate that $1,670 million of our FY 1966 budget request is for space . . . .

Spacecraft Mission Projects.

. . . As a result of intensive studies carried out by the Air Force during the past year, we have reached several decisions regarding the future of the MOL program. These decisions were reached with full consideration of both NASA and Defense needs and in accordance with the agreement I reached with the Administrator of NASA in August 1962 to work toward a single national manned earth orbital R&D program.

As you know, we are participating in NASA's Gemini manned flight program to the extent of executing certain military experiments which are possible in the limited volume of that craft without degrading the primary flight objective. The $2 million requested in our FY 1966 budget will complete this participation. We are also providing a number of supporting functions for Gemini, including booster development, range and recovery support.

NASA's principal effort is the Apollo program with which I am sure you are familiar. The Apollo system for the lunar landing is planned to be qualified for a maximum of ten days flight time; however, NASA is also studying extensions of the system to provide for a longer stay on the lunar surface. We believe that the Defense Department, in meeting its own requirements in space, should take these existing and future capabilities fully into account, in accordance with the concept of an integrated national space program. And, this we have done in planning our own man-in-space program.

The Air Force and the Navy have carried out a number of both inhouse and industry studies to: (1) outline possible military functions for man in orbit; (2) define ground and space experiments to determine the effectiveness of these functions; and (3) design, in a preliminary way, spacecraft and supporting equipment required for the tests in space. Included were broad systems studies which emphasized the use of hardware already developed in the Gemini and Apollo programs, a study of a set of primary and secondary priority military experiments, a study of the ability of man to contribute to the assembly, alignment and service in orbit of large structures such as a telescope or radio antenna, and a study of the contribution which man in orbit could make to the technology of military space activities, whether the application was to be manned or unmanned.

On the basis of these studies and our discussions with NASA, we have concluded that the objectives of the MOL program should be broadened. The following primary objectives, listed in order of priority, have been established as a guide to future planning:

- Development of technology contributing to improved military capability for manned or unmanned operation. This may include intermediate steps toward operational systems.
- Development and demonstration of manned assembly and servicing in orbit of large structures with potential military applications. This will interact strongly with the preceding objective.
- Other manned military space experimentation.

These primary objectives of MOL are essential military objectives and will, therefore, be pursued by Defense. In addition, MOL program planning will consider the following "national" objectives of scientific significance:

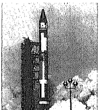
- Basic scientific and general technological manned experimentation.
- Development and demonstration of manned assembly and servicing in orbit of large non-military structures, such as astronomical telescopes and radio antennae for scientific use.
- Biological responses of man in orbit for 30 days or more. . . .

There are a number of possible equipment configurations which could provide a system with these characteristics, including an adaptation from the Gemini or Apollo programs where this can be done without interfering with the national lunar objectives. The choice should be made on the basis of effectiveness, timeliness and cost. No new hardware should be developed unless necessary.

Accordingly, we have adopted the following course of action:

- The Air Force will define the experimental program to meet the broadened military objectives, placing emphasis on developments that may lead to operational systems. The Air Force will determine the essential vehicle characteristics to meet those objectives and, in cooperation with NASA, will define significant additional experiments addressed to the national objectives.
- The Air Force will assess the proposed specifications of a MOL system (Gemini B, laboratory and Titan IIIC) against the needs of the experimental program. Three preliminary design studies will be initiated with industry, using FY 1965 MOL funds, to provide the cost and technical information needed to select the final configuration. The Air Force will also examine approved configurations of the Apollo system and, in cooperation with NASA, will examine the modified configurations of the Apollo system now being studied by NASA to meet its objectives.

- To preserve the option for proceeding with MOL on an orderly basis and to make effective use of the Titan III R&D flight program, action will be taken (using FY 1965 funds) to qualify components of the Gemini B plus laboratory configuration aboard Titan IIIC approved development vehicles. (No men will be carried on these flights.)



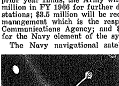
- One hundred fifty million dollars has been included in the FY 1966 budget request for continuing the design studies, narrowing the effort to two contractors for program definition and a single contractor for subsequent full scale development. The study contractors to be selected in FY 1965 will be chosen on the basis of their ability to execute development, whether the approach finally selected is the Gemini B or a version of the Apollo system. However, the FY 1966 funds will not be obligated until we are convinced that a satisfactory approach has been found and that the expected results of the program will be commensurate with the cost.

Project "Gemini (Manned Space Flight)" represents the Defense Department's participation in the NASA-Gemini program. . . . The $2 million requested for FY 1966 will complete this project.

I have already discussed "Nuclear Test Detection (VELA)" in connection with the Test Ban Treaty safeguards. Twenty-two million dollars is included for this program in the FY 1966 budget.

Last year I informed the Committee that we were actively exploring the possibility of securing satellite communication services through the system which the new Communications Satellite Corporation was planning to build and operate. . . .

Sufficient funds are available for the completion of the initial system's space elements which are the responsibility of the Air Force. However, in addition to $18 million of prior year funds, the Army will require an additional $2 million in FY 1966 for further development of the ground stations; $3.5 million will be required for overall systems management which is the responsibility of the Defense Communications Agency; and $9 million will be needed for the Navy element of the system.



The Navy navigational satellite system will require $22.9 million in the FY 1966 budget. This system, which reached full operational status in July 1964, is designed to provide, under all weather conditions, navigational fixes on any point of the earth's surface. Although the development phase of this program is substantially completed, some research is continuing to improve the life and reliability of the satellite. Of the $22.9 million included in the FY 1966 budget, $7 million is for this purpose. The remaining $16 million is for annual operating costs including the purchase of launch vehicles required to replace inoperative or dying satellites. . . .

Vehicle, Engine and Component Developments.

The largest item in this category is still the "Titan III." . . . Designed to serve NASA as well as Defense Department purposes, Titan III will be a standardized launch vehicle for a wide range of manned and unmanned missions. . . .

Although progress to date clearly indicates that development could be completed by June 1966, a decision has been made to stretch out the basic Titan III development program schedule to June 1967. The purpose of this stretch-out is to assist in maintaining a Titan IIIC production and launch capability for the various "user" programs which will not require the Titan IIIC until calendar year 1967. It will not affect the three initial Defense communication satellite payloads currently assigned to three of the Titan IIIC development flights. The follow-on Defense Communication Satellite and probably the MOL are expected to use the Titan IIIC once vehicle development is complete.

The cost of the basic TITAN III R&D program to completion should be between $880 and $890 million. . . .

The FY 1966 budget includes $35 million for "Reentry and Recovery (START)" projects. . . .

The next item is "Advanced Space Guidance" for which $10 million is requested in the FY 1966 budget. This effort, formerly titled "Standardized Space Guidance," is now being carried as an Advanced Development program. . . .

The $6 million included in the FY 1966 budget for "Solid Rocket Engine Development" will complete Defense Department participation in the national large solid fuel booster development program. . . .

Last year we initiated a new "Liquid Rocket Engine Development" program, designed to demonstrate the feasibility of the modular approach to large rocket engine development. . . . The FY 1966 budget includes $8 million to continue this work.

The next item, "Chemical Rocket, Space Maneuvering," is a new program for which $7 million is requested for FY 1966. This program will provide a space maneuvering capability for possible near term application as well as demonstrated propulsion components for future needs. This system will be capable of efficient multiple re-starts in a space environment limited only by the availability of propellants.

Other Defense Activities Supporting the Space Program.

The Ground Support category includes the prorated cost of the missile ranges and test instrumentation as well as the satellite detection and tracking systems. The largest item in the category is the $116 million for the Eastern Test Range. . . .

The FY 1966 budget includes $40 million for SPACE-TRACK and $6.8 million for SPASUR.

The $36.2 million requested for "Satellite Tracking and Control Facilities" will continue the modernization of the network of six tracking stations and one control center which provides an "on-orbit" tracking, command, control data "read-out" and recovery for all Defense space vehicles except those of the Communications Satellite (COMSAT) and Navigational Satellite programs. . . .

Research

. . . In addition to its own inhouse laboratories, the DOD supports nearly half of all the academic research in the physical sciences and engineering now being done in American universities and colleges. . . . We have therefore included in our FY 1966 request a total of $387 million for research. . . .

Exploratory development.

During this stage of research and development, we approach the solution of specific military problems up to the point of developing hardware for operational testing. Along with research, exploratory development forms the pool of technical knowledge from which future weapons systems will be devised and designed. A total of $1,142 million has been included in our FY 1966 budget. . . .

Army

The Army's exploratory development effort, for which $254 million is included in the FY 1966 budget, provides for studies and analyses and fabrication, test and evaluation of various components to establish their feasibility, practicability and relative advantages for use in future major development programs. This effort includes: components for new infantry close-support artillery and air defense missile systems; new and improved propulsion systems for Army aircraft; applied research in rocket propellants; work on new power sources and energy transformation devices; new, lighter, improved ground surveillance and target acquisition techniques; improved designs and materials for small arms and armor defeating projectiles; nuclear weapons effects as applied to Army equipment; applied research directed toward improved surface mobility, particularly in remote areas; mine warfare and barrier research; and mapping and geodetic research directed toward overcoming the limitations of current equipment and techniques with respect to speed and extent of area covered.

Navy.

The Navy's exploratory development effort is planned to produce improved "know-how" for the performance of all important naval functions. Included are the detection and localization of underwater, surface, and air targets; environmental surveillance with emphasis on the air-ocean interface; navigation; command-control; weaponry; ship and aircraft construction; and personnel and logistics.

The overall program on surveillance and command-control includes work on radar, ASW detection devices, jamming devices, data correlation techniques, navigation devices, communications, etc., for both ships and aircraft. In the field of ordnance, emphasis will be placed on nonnuclear air launch systems. Missile propellants, guidance systems and countermeasures will also be studied. Several projects involve advanced aircraft concepts, with emphasis on simplicity, endurance and low-speed characteristics. Work related to ships and submarines will concentrate on hull structures, integrated controls, and fatigue characteristics of deep-diving submarines, as well as advanced propulsion systems (including nuclear) and measures to reduce underwater noise levels. About one-third of the $342 million requested for the Navy in FY 1966 will be devoted to problems directly related to ASW.

Air Force.

About one-fourth of the $316 million requested for the Air Force's FY 1966 exploratory development program will be devoted to space or space-related subjects. Included are studies, experimentation and component developments in such fields as guidance, flight control, propulsion, life sciences, and electromagnetic techniques.

In other areas, emphasis will be given to improving technology related to advanced tactical and strategic missiles, new propulsion cycles for hypersonic manned systems, over-the-horizon radars, V/STOL aircraft, the feasibility of laminar flow control in supersonic flight, new materials and structural concepts, technology related to communications, command and control, intelligence techniques, computer and data processing, electromagnetic techniques and advanced weapons.

Advance Research Projects Agency (ARPA).

A total of $230 million is included in the FY 1966 program for ARPA's exploratory developments projects. . . .

Project Defender. We have included $127 million for Project Defender, which is concerned with the development of the scientific and technical knowledge needed for the design of U. S. defenses against ballistic missiles and satellites, and for the assessment of the ability of U. S. ballistic missile systems to penetrate enemy defenses. . . .

Project Vela. I have already discussed this project in connection with the Test Ban safeguards program. $59.3 million has been included in the FY 1966 budget to continue this work. . . .

Project Agile. This project is designed to provide research and development support for the solution of remote area conflict problems with primary emphasis on requirements of indigenous forces in guerrilla warfare situations. Agile is but part of a much larger effort in counterinsurgency warfare research for which a total of about $160 million has been included in the FY 1966 RDT&E budget. . . .

Advanced Development

This category includes projects which have advanced to a point where the development of experimental hardware for technical or operational testing is required prior to the determination of whether the items should be designed or engineered for eventual service use. In contrast to engineering developments where design specifications are employed, advanced developments permit the use of performance specifications which provide the contractor much greater latitude in meeting the requirement, thereby encouraging innovation. . . . To encourage innovation, we plan to expand the value of advanced development projects from $572 million in FY 1965 to $828 million in FY 1966, partially at the expense of engineering developments.

Army.

The first two items on the Army list of advanced developments—"Operational Evaluation V/STOL" and "New Surveillance Aircraft"—are both part of a broader Defense Department program for the development of experimental prototype vertical, or short, take-off and landing aircraft suitable for operational testing by the three Services. Both of these projects have heretofore been funded on a tri-Service basis. The first was formerly known as the "Tri-Service V/STOL Aircraft" program and was funded, roughly, one-third by Army, one-third by Navy and one-third by Air Force. It actually encompassed three separate V/STOL developments—the XC-142A and X-19A managed by the Air Force and X-22A managed by the Navy. The second, the "New Surveillance Aircraft," was funded one-half by Army and one-quarter each by the Navy and Air Force and also encompassed three separate developments—the P-1127 Hawker, the XV-4A and the XV-5A—all managed by the Army. These financing arrangements have proven to be unduly cumbersome and beginning in FY 1965, each project is being funded by the managing agency; the FY 1966 budget has been prepared on this basis. Accordingly, only a nominal amount is requested for the Army in FY 1966 to participate in the Tri-Service evaluation of XC-142A, X-19A and X-22A.

The XC-142A is the largest of the three projects with a total estimated cost of $120 million for five test aircraft. . . . Further technical and operational evaluation will be conducted on all five aircraft during the balance of FY 1965 and through FY 1966. . . . The X-22 is a twin tandem tilting duct fan-powered flight research vehicle. Two prototypes are being built at a total estimated cost of $32 million with the first flight scheduled for July 1965. . . .

The X-19A is another research aircraft with twin turbines and four tandem tilted propellers. Two prototypes are being procured at an estimated cost to the Government of $14 million. The first flight was made in Novembe 1963 and flight testing will continue through FY 196

The largest development in the New Surveillance Aircraft program, for which $7 million has been included i the FY 1966 budget, is the XV-6A (P-1127 Hawker), British designed light weight V/STOL strike-reconnaissance aircraft. . . . The U. S. share of the cost is estimate at about $38 million, including approximately $6 millio in FY 1966. . . .

In addition to the P-1127 program, the U.S. is partic pating in several cooperative R&D programs with Ge many and France which provide for an exchange of tec nical data on V/STOL technology. The German and Frenc V/STOL projects incorporate variations in airframe a propulsion designs which have not been duplicated in t United States.

The XV-4A, the second development under the N Surveillance Aircraft program, is an augmented jet design. Two research aircraft have been built at a c of $4.2 million. . . . One aircraft was lost in the summ of 1964 but flight testing is continuing on the second craft.

The XV-5A, the third development under the New Surveillance Aircraft program, is a fan-in-wing design. . . . Two prototypes are being procured at a cost of $16.1 million. Flight testing will continue through FY 1966 .

Including the Navy and Air Force V/STOL projects, a total of about $79 million is included in the FY 1966 budget for this program. . . .

The next item is the "Heavy Lift Helicopter" which was started in FY 1963 with the purchase of six off-the-shelf, heavy lift "flying crane" type helicopters. . . . The $3 million requested for FY 1966 is to continue field evaluation of the six helicopters.

For "Aircraft Suppressive Fire Systems," $4 million is included in the FY 1966 budget. . . .

The "CCIS for Field Army" is a command and control information system. . . .Considerable progress has already been made in two areas—intelligence and fire support—and the $13 million requested for FY 1966 will support work in the other three areas and will be used to develop more efficient automatic data processing equipment and communication. . . .

The "DOD Communication Satellite, Ground," is the Army portion of the Defense Communications Satellite Program for which $20 million is required for FY 1966. . . .

Navy.

The first two items in the Navy list of advanced developments represent the Navy's participation in the DOD V/STOL development program. The $5 million requested for "V/STOL development" is to continue work on the X-22, which is now being completely funded by the Navy. No funds are requested in the Navy's budget for "P-1127 Hawker" which is now being entirely funded by the Army.

The $6 million requested for "Advanced Aircraft Engines" is for a new program designed to demonstrate the technical feasibility of a high thrust-to-weight ratio, turbo-fan engine, including thrust deflection and augmentation systems. Such an engine would have a wide application to V/STOL and conventional general purpose attack aircraft in both the subsonic and supersonic regimes.

. . . the "Advanced SAM System," for which $12 million is requested in FY 1966. This is the surface-to-air missile system which we hope will eventually replace the Terrier, Tartar and Talos. . . .

The "Advanced Anti-radiation Missile System," for which $6 million is requested in FY 1966, is contemplated as a follow-on to the Shrike missile. Although the Navy will do the work on the subsystems, this missile development is also of interest to the Army and Air Force.

The $5 million requested for the "Advanced Sea-based Deterrent" project would continue a broad program of investigation and applied research focused on possible configurations of future sea-based strategic systems from which an advanced weapon system may eventually evolve.

The $13 million requested for "Astronautics" in 1966 includes $6 million for the Navy's portion of the Defense Communications Satellite program and $7 million for satellite geophysics (Project ANNA). . . .

For ASW RDT&E, we have included in the FY 1966 budget a total of $386 million, $121 million under Advanced Developments.

The first item in this group, for which $5 million is requested in 1966, is "Artemis/Underwater Acoustics," a large scale experimental effort in the long range detection of enemy submarines by active means. . . .

The second project in this group, Trident, comprises a number of advanced development efforts in submarine detection. $4 million dollars is requested in FY 1966 to continue this project.

The next item, "Airborne ASW Detection Systems," for which $21 million is requested in FY 1966, includes a number of related projects. . . .

"Advanced Submarine Sonar Development." Project definition results will be evaluated in FY 1966 and development contracts will be awarded later for the design fabrication and testing of developmental models.

The "Advanced Surface Sonar" project involves two major efforts. The first sonar would have a passive and active detection capability many times greater than our present sonars. The second effort will provide increased detection, range and classification capabilities for the existing AN/SQS-23 sonar.

The next project, for which $5 million is requested for FY 1966, was initiated this year and is designed to develop a means of increasing the capabilities of our ASW torpedo homing systems.

The $2 million requested for "Hydrofoils" in FY 1966 is for the evaluation of the 110 ton 45 knot patrol craft already completed and the 320 ton 50 knot hydrofoil auxiliary ship to be completed late in 1965. The evaluation effort will concentrate on hydrodynamic structure, propulsion and control systems in order to determine the utility of these ships in the ASW and other roles.

One of the important efforts being greatly expanded in FY 1966 is the "Deep Submergence Program" for which $18 million is requested. . . .

The program "Reactor Propulsion Plants," for which $20 million is requested in FY 1966, covers two major projects. One of these is directed to the development of a nuclear power plant which would provide a quieter, safer, more reliable propulsion plant for submarines. This project will require $6 million in FY 1966. Results of work conducted under the second project, originally directed to the development of a smaller, less expensive single reactor power plant for frigates and destroyers, have established the feasibility of a power plant with a very long fuel life. Since two such reactors could produce as much power as four of the reactors on the Enterprise, we have asked the AEC to develop a nuclear propulsion plant for possible use on the attack carrier tentatively planned for the FY 1967 shipbuilding program. The $14.2 million requested for this project would complete the Navy's share of the development (propulsion plant machinery as opposed to the reactor development of the AEC), and would provide for testing certain prototype components.

"Propulsion Development Sea Hawk," for which $14 million is requested in FY 1966, will concentrate on the development of a combined gas turbine propulsion system for ASW ships. . . .

The $1 million requested for the "ASW/Ship Integrated Combat System" in FY 1966 is to investigate the cost and feasibility of developing a single system which would integrate command control with the control of weapons and the sonars.

Air Force.

The first four items on the Air Force list of advanced developments are all part of the V/STOL aircraft technology program discussed earlier.

The $8 million requested for "Tri-Service V/STOL Development" will continue operational evaluation of the XC-142, the XC-142A and the X-19A.

The $8 million requested for "V/STOL Aircraft Technology" provides for the test and evaluation of various domestic and foreign V/STOL concepts and equipments with a view towards eventual design of an operational V/STOL fighter-type aircraft. Included in this evaluation are the British Hawker P-1127, the French Mirage IIIC and the German VG-101 and VAK-191B.

The $30 million requested for "VTOL Engine Development" encompasses two separate types of engines—one, a pure lift engine and the second, an engine which can deflect its thrust to produce lift during take-off and landing and also be used for forward propulsion. . . .

The fourth project on the list, $10 million for a "Light Weight Turbojet," is essentially to demonstrate the technology for light weight turbo engines for various purposes including V/STOL. . . .

The next two projects, "Overland Radar" and "AWACS," are closely related. The first, for which $8 million is requested in FY 1966, concerns the development of the radar technology which would be needed in the development of an airborne warning and control system (AWACS). . . . The $3 million requested for AWACS would initiate systems development at a slower rate compatible with the integration of the aircraft and the radar.

For "Tactical Fighter Avionics," $31 million is requested for the development of an advanced air-to-air and air-to-ground delivery capability. . . .

The $10 million requested for "Reconnaissance Strike Capability" is to develop and demonstrate a capability with multiple high-resolution sensors such as side-looking radars, for both the Strategic and the General Purpose Forces.

The $10 million requested for the "Close Support Fighter" is to (a) evaluate existing aircraft such as the A–4, A–6, A–7 and F–5 for the close support role and (b) cover the cost of modifying one of these types of aircraft for the Air Force close support mission. . . .

The FY 1966 budget includes $6 million to continue the X–15 project. This rocket powered research aircraft . . . is now being used as a "test bed" aircraft for a group of advanced experiments in aeronautical and space sciences. . . .

The $5 million requested for "Tactical Missile Guidance Development" would provide for the fabrication and testing of several homing and tracking guidance heads. . . .

To wrap up the Stellar Inertial Guidance project which was originally undertaken as part of the M/MRBM development program, $1 million will be needed in FY 1966. . . .

The FY 1966 budget includes $5 million for continued study of the various technological and operational concepts for an "Advanced ICBM." and $6 million to continue work on "Low Altitude Supersonic Vehicles". . . .

Engineering Development

This category includes those projects being engineered for Service use, but which have not as yet been approved for production and deployment.

Army.

. . . The "Nike-Zeus testing" program will be completed during the current fiscal year and all further testing will be taken over by the Nike X program. The $407 million requested for "Nike X" will continue, on an urgent basis, the development of that new system including the multi-function phased array radar (MAR), the missile site radar (MSR), high speed data processing equipment, the Zeus missile and the high acceleration Sprint missile.

The $10 million requested for "Forward Area Air Defense" will be devoted to the further analysis of the forward area air defense problem created by the disappointing results of the Mauler development program. . . .

The funds requested in FY 1966 for the "Division Support Missile (Lance)" will substantially complete system development. . . .

$64 million is requested in the FY 1966 budget to continue engineering development of a variety of other weapons. Included in this category is the development of the Special Purpose Individual Weapon (SPIW) as a possible replacement for the M–14 rifle and the M–79 grenade launcher. Another item in this category is the 107 mm. mortar being developed as a replacement for the current 4.2" mortar. . . .

The next two items, "Aircraft Suppressive Fire Systems" and "Advanced Aerial Fire Support Systems" are closely related. The former, for which $15 million is requested, is concerned with the development and adaptation of weapon sub-systems for aircraft. . . .

The latter project, for which funds are also requested. would initiate the development of a completely integrated armed "helicopter-like" system as a replacement for the present improvised armed HU–1B system. . . .

The $2 million requested for Tactical Transport Aircraft is to complete development of the CV–7 (Buffalo). This airplane is being developed jointly by the U. S. and Canada for Army use. . . .

The $18 million requested for "Combat Surveillance and Target Acquisition" includes a number of different projects: ground radar for detection of moving vehicles and personnel; sound and flash ranging equipment for locating hostile weapons; image interpretation and photo processing equipment; and an unmanned aerial surveillance system. . . .

The $25 million requested for "Communications and Electronics" will finance the development of tactical radios, automatic electronic switchboards and air traffic control systems.

The FY 1966 budget request for the "Heavy Anti-Tank Missile (TOW)" should substantially complete the funding of this development. The FY 1966 funds requested for the "Main Battle Tank" will provide for the U. S. share of the tank component development cost covered by the joint U. S./FRG tank development cost sharing agreement, the project management costs for the Main Battle Tank development which are not covered by the agreement, and certain other tank development costs.

Navy.

The first five items on the Navy's list of engineering developments are all associated with undersea warfare and, in total, amount to $65 million in FY 1966.

. . . The $4 million requested for "ASW Ship Command and Control System" will continue modification of computer and display equipment developed under the Navy Tactical Data System program. . . .

The largest single item in this category is the amount requested to continue development of the "MK–48 Torpedo" which I discussed earlier in connection with the Navy General Purpose Forces.

The FY 1966 budget includes $4 million for "ASW Rockets." . . . Project definition is planned for FY 1966.

The $16 million requested in FY 1966 for "Marine Corps Developments" includes: an amphibious assault personnel carrier capable of transporting infantry weapons and supplies through very rough surf in the assault phase of an amphibious operation; a landing force amphibious support vehicle for rapid movement of supplies and equipment from ship to shore and over land; and light weight, helicopter-transportable, high performance ground radars.

The regenerative turbo prop engine development for ASW aircraft, which was described in this section last year under the heading "Aircraft Engines," is to be shelved following completion of the hardware, without going on to pre-flight test rating. . . .

The last item, "Special Warfare Navy Aircraft," is the new light armed reconnaissance airplane (LARA), designed primarily as a combination weapons delivery-logistics, primitive area STOL air support vehicle for counterinsurgency operations. . . . The total cost of the program is estimated at $18 million to be completed with the $6 million requested for FY 1966.

Air Force.

I have already discussed most of the Air Force engineering developments in connection with other programs.

The $25 million shown for the "XB–70" in FY 1966 will complete the funding of that project. . . .

The next item, "Advanced Manned Aircraft," encompasses studies on the airframe, the development of advanced avionics and design and demonstration of the new power plant required by advanced aircraft, including strategic bombers. Last year the Congress appropriated a total of $52 million for the development of an advanced strategic manned aircraft. Of these funds, $28 million will be used in FY 1965 and the remaining $24 million in FY 1966, leaving $15 million in new obligational authority needed next year.

The development of a new "Short Range Attack Missile," which could be used with the B-52 as well as with a new strategic and other advanced aircraft, will begin this year. . . . $37 million more is requested for FY 1966 to continue this work.

The next item on the Air Force list is the "YF-12A" for which $28 million is requested for FY 1966. Of this amount, $5 million will be used to continue work to improve the ASG-18/AIM-47A fire control and air-to-air missile systems. . . .

Substantial funds are requested in the FY 1966 budget for continued development of "Advanced Ballistic Missile Reentry Systems." . . .

For "Nike/Zeus Targets" to support the Nike X development program, $9 million is requested for FY 1966.

No additional funds are being requested for the "M/MRBM," which is being dropped from the development program. . . .

Management and Support

Army.

For the support of White Sands Missile Range, one of the national ranges used by all Government agencies, $88 million is requested. . . .

At the beginning of the current fiscal year, the Army assumed full responsibility for the Kwajalein Test Site, providing essentially the same range support as previously provided by the Navy.

The $199 million requested for General Support covers the costs of all Army R&D installations and activities other than White Sands and Kwajalein. . . .

Navy.

The Pacific Missile Range with headquarters at Point Mugu, California, is responsible for range scheduling, communications, weather and meteorological services and data reduction in support of all sea-based missile and space launch operations in the Pacific. . . . The FY 1966 request of $77 million is $46 million less than currently programmed for FY 1965, principally because of the planned transfer of the Point Arguello and Point Pillar facilities in California to the Air Force. . . .

The Atlantic Undersea Test Evaluation Center (AUTEC) will have three underwater test ranges sited in a deep sea canyon off the Bahamas, designed to test weapons, sonars, and acoustics systems. The $8 million request for FY 1966 is $11 million less than the current FY 1965 program. . . .

For the General Support of all other Navy R&D laboratories and test facilities, $210 million is requested for FY 1966.

Air Force.

For the Eastern Test Range, formerly known as the Atlantic Missile Range, $221 million is requested in FY 1966. . . . To meet these more demanding requirements, the funds included in the FY 1966 request will provide a capability for covering different launch azimuths, including a capability to assist the Western Test Range in tracking polar-orbiting satellites. The program will also provide for improved ship and aircraft instrumentation to facilitate the search and rescue activities associated with the manned space flight programs.

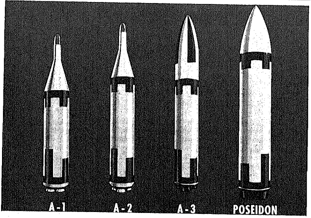
The Air Force's Western Test Range (AFWTR) consists of a complex of range instrumentation networks supporting Air Force, Navy and NASA launches from Vandenberg Air Force Base, Point Arguello and Point Mugu. The transfer of responsibility for land-based missile and space launch operations from the Navy will be completed by the end of the current fiscal year and therefore the $62 million required for FY 1966 is included in the Air Force request.

General Support, including "Development Support," will require $645 million in FY 1966. . . .

Financial Summary

The Research and Development Program, including the development of systems approved for deployment, will require $6.7 billion in New Obligational Authority for FY 1966. A comparison with prior years is shown below:

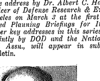
	1962 Actual	1963 Actual	1964 Actual	1965 Est.	1966 Proposed
			($ Billions, Fiscal Years)		
R&D—except systems approved for deployment	4.2	5.1	5.3	5.1	5.4
R&D—systems approved for deployment	2.6	2.5	2.3	1.9	1.9
Total R&D	6.8	7.6	7.6	7.0	7.3
Less: Support from other appropriations	—0.5	—0.5	—0.5	—0.4	—0.5
Total R&D (TOA)	6.3	7.1	7.1	0.6	6.8
Less: Financing Adjustments	—0.9	—0.1	—0.1	—0.1	—0.1
Total R&D (NOA)	5.4	7.0	7.0	6.5	6.7



This artist's sketch shows the comparative designs of the three versions of the Polaris missile and the proposed Poseidon missile. Poseidon is a follow-on missile to Polaris. Fleet Ballistic Missile submarines will, with minor modifications to the launching system, be able to carry the Poseidon.

FROM THE SPEAKERS ROSTRUM

Featured in this month's "Speakers Rostrum" are excerpts from the address by Dr. Albert C. Hall, Dep. Dir. (Space), Officer of Defense Research & Engineering, at Los Angeles on March 3 at the first of five regional Advanced Planning Briefings for Industry. Highlights of other key addresses in this series, which are sponsored jointly by DOD and the National Security Industrial Assn., will appear in subsequent issues of the Bulletin.



Dr. Albert C. Hall

Excerpts from address by Dr. Albert C. Hall, Dep. Dir. (Space), Office of Defense Research & Engineering, before DOD-NSIA Advanced Planning Briefing Conference, Los Angeles, Calif.

The Technological Challenge of the Next Ten Years

Our military technology is supported by a RDT&E budget for which we have requested $6.5 billion for Congressional appropriation and authorization in FY 1966. . . . Since the RDT&E budget is substantially affected by the force level decisions and potential decisions, we can say, with reasonable confidence, that this area of expenditure is likely to remain relatively constant for the next few years.

There are uncertainties in the budget because there are uncertainties in the operational needs, and there are uncertainties because there are technical unknowns. For example, assume for a moment that the RDT&E budget remained level at $6.5 billion over the next ten years time period which my topic covers. We would then be discussing military technology supported by a total obligation of $65 billion. . . .

Therefore, I hope it is clear that there is a relatively predictable fraction and relatively unpredictable fraction of future military technology expenditures. The predictable portion is closely related to force level decisions and improvements that we believe should be feasible to implement. The unpredictable fraction of the technology budget is related to innovations, discoveries, inventions which have not appeared. These cannot be forecasted and our policy in regard to this area in the Department of Defense is to create an atmosphere conducive to the birth of these new ideas. Indeed, unless such ideas appear it may be that a level of $6.5 billion per year should not be sustained.

Our R&D efforts today may be divided approximately into four broad functional areas—Strategic Systems, Space, Limited Warfare and Research and Exploratory Development. . . .

Strategic Systems

Because of the tremendous outlays we have made in our strategic systems in the past, the investment must be protected and improved. Since it is in first-class condition today and we intend to keep it that way, the situation has important implications insofar as the direction of developments that will be emphasized. . . . We have been carrying a development program of large solid motors in the 120-inch and 156-inch diameter. These could be applied in the future to increasing the capability over MINUTEMAN II, which already is a substantial improvement of MINUTEMAN I. Guidance and geodesy show promise of improvement and we will push this improvement as far as technology permits. We are working to make our warheads harder to detect and counter, and much of this work is carried out under the ABRES program, which is funded

SECDEF MESSAGE TO INDUSTRY BRIEFINGS

While he was unable to be present in Los Angeles on March 3 for the opening of the first of the five regional Advanced Planning Briefings for Industry, Secretary of Defense Robert S. McNamara underscored their significance in the following message which was read to participants in the briefings by Joseph A. Califano, Jr., The Special Assistant to the Secretary and Deputy Secretary of Defense:

"The military security of the United States depends upon more than the superiority of our military strategy and tactics. Maintaining our security requires, also, that we remain ahead in the technological competition for better weapons systems—and, above all, that we excel in managing the vast resources required to develop, acquire and maintain the forces which are the foundation of our national policies.

"Management of our Defense resources is a job which cannot be done by Government alone. Such management can result only from efficient partnership between Government and Industry. The series of meetings which you are about to attend are an expression of that partnership—and of our continuing joint effort to operate the Defense procurement program with a maximum degree of efficiency and economy, with fair and equitable profits to contractors, and in an environment which preserves the basic principles of the free enterprise system.

"I believe that the Advanced Planning Briefings for Industry will make an important contribution to our joint trusteeship on behalf of the American people for the expenditure of some $30 billion annually in Defense procurement—and will thereby greatly assist President Johnson in his efforts to assure our country a dollar's worth of Defense for every dollar spent."

at more than $150 million a year. The initiation of the development of the POSEIDEN missile, announced recently by the President, illustrates the direction that will be emphasized in strategic system development. The POSEIDEN makes use of the launch and invulnerability offered by our still growing fleet of nuclear submarines but offers the possibility of substantial increases in effectiveness over POLARIS. There are many competitive opportunities available to industry with the initiation of POSEIDEN. . . .

The operation of NIKE X depends upon the development of a radar that can handle effectively the large numbers of targets (real and decoys) that might be expected in an attack, the use of the drag exerted by the atmosphere to help distinguish between real targets and decoys, and the development of an interceptor missile, the SPRINT, to reach these targets while they are still high in the atmosphere. . . . Unless the interceptor can reach the target very rapidly, the defense cannot make use of the atmosphere to help distinguish between true and false targets. However, when interceptor times have been reduced to a certain point there is little to be gained by further reductions. Improvements on the SPRINT missile are studied as part of the ARPA Hibex program.

Because of the range of threats to which we may be exposed, from large sophisticated attacks to small or accidental ones, we have adopted a "building block" philosophy in NIKE X in which, by various mixes of missiles and radars, a defense deployment can be tailored to any reasonable threat. By augmentation at selected sites or by geographical diversity, an initial capability can be raised subsequently to a higher level. . . .

Finally, there are a number of other areas in strategic systems where we are constantly looking for better development. . . . These systems are: strategic command and control, range instrumentation and support, and surveillance and detection equipment (such as BMEWS and SPASUR). These programs will be in being for as far ahead as we can see. Together, they represent a large market of about $800 million a year, particularly to the electronic industry. We are always looking for improvements here, will continue to do so for the foreseeable future, and encourage you to work with the appropriate military department with your ideas for improvements in effectiveness.

Space Systems

Let us now consider the challenges and problems in another area of great interest to us; namely, space systems in support of national security. . . . The Department of Defense space expenditures are about $1.5 billion annually and we expect that level of effort to stay relatively constant for the foreseeable future.

In general, the basic rule used in the Defense Department with respect to space is this: if a mission can be done more effectively in space than on the earth's surface, that is where it will be done. Over and beyond that basic rule, we will support the national space program by developing technology in order to advance the state of the art, to explore the environment more thoroughly, and to provide "technological insurance" against possible surprise in space. . . .

The military missions performed in the space environment today are in the nature of support systems rather than weapons systems as such. Today we have no weapons deployed in space, and it is unlikely that we will deploy such weapons in the future. Responsible analysis to date has concluded that such systems are both less effective and more costly than comparable surface based weapons. However, we will continue to place emphasis on space for support and today we are making very effective use of unmanned satellites for all types of important supporting missions — navigation, surveillance, communication, geodesy, weather, etc. . . .

I think you can see what our major problems in the space program are from this outline: reliability and lifetime of components, cost, and useful military missions. To some extent they interact, and an improvement in one area will lead to improvements in the other. A major advance has been that our past nemesis, weight-lifting ability, has been to a large extent overcome. We believe that in space particularly, the direction we will go will be governed by the ideas you produce.

Limited Warfare

The area of tactical weapons research and development presents a different type of technical challenge to the country. With the emplacement of our strategic missile forces substantially behind us, we expect to continue to emphasize the so-called limited war systems that, as you know, saw a large increase in effort during the past four years. . . .

Is there a guiding theme for limited war research and development? Clearly, an entire spectrum of possible conflict is involved—from Korea-type wars to counter-insurgency. Moreover, there are special aspects to the topic: naval problems, including ASW; close-air support; reconnaissance and battlefield surveillance; tactical missiles, etc. This means that research and development for limited warfare is characterized by great diversity, and generalized statements may not be meaningful. . . .

There are several problems that seem to be common to almost all tactical situations. . . . The most important of these common problems, I think, is target acquisition. Whether we are talking about antitank operations, or antisubmarine operations, or locating and destroying enemy troop units, the problem of "where is the target and how deployed" looms up. For instance, the location and identification of hostile submarines remains, and is likely to continue to remain the number one priority in the ASW field even though great effort has been given the question since World War II. Progress here may require improved understanding of the undersea environment by all responsible for development of detection equipment. It may be particularly important to develop long life, reliable, deep operating, remote sensors and weapons. It may be that the ocean is so big that the problem cannot be handled any other way. . . .

Another point that bears emphasis is that the nature of the target can change in the future and we are led to search for entirely different methods for target detection and acquisition. There is much opportunity for creative ideas here.

There are related problems in shipborne radar. Today the size of detection and acquisition equipments aboard ship required for the multiple targets a ship must handle is such that we cannot put aboard all the armament we would like. . . . A similar situation exists in the surface-search installation. As target handling requirements grow, this situation becomes even more severe. There is a real challenge to industry in the needs we foresee here.

Our tactical aircraft can make use of improved capability in the target acquisition area. We hope industry can develop an effective airborne track-while-scan radar that can be used for land surveillance as well as air targets. . . .

The second problem listed as typical of tactical situations is self-location. There is the need of self-location of mobile ground forces in relative coordinates with very small errors. This is important for re-supply, fire direction and command. How well a mobile unit can locate itself is critical—and time is of the essence. . . . Allied to this is the need for better identification of friendly forces, particularly by aircraft. . . . This problem is shared by naval forces and I will refer to it again later.

The third general problem listed was that of coping with the environment. This, of course, includes a wide variety of problems but let me illustrate by one problem, that is over-land mobility. The all-terrain, all-weather vehicle is the dream of every military man that ever lived and we are still looking. . . .

Other problems in tactical naval warfare illustrate the importance of cost to limited warfare. Consider the problems associated with nuclear propulsion for naval vessels other than carriers. As the costs of nuclear propulsion become lower, the idea of broader application of nuclear propulsion becomes more attractive. Today costs are approaching the point where nuclear propulsion on very large ships is almost competitive with oil. However, carriers cannot operate well by themselves and it is highly desirable to provide comparable speed and endurance to the requiring supporting forces. Substantially lower costs may have a dramatic influence on task force effectiveness . . .

Let me close this section on tactical, limited war needs by listing a few of the problems we want to solve today.

We need longer mean-time between failure in equipment in the operational environment. Mean-time between failure tests in the laboratory or special flight test is giving optimistic results. Also, much of our avionic equipment does not include the self-check features that are feasible now.

We need better work to match advanced conventional ordnance against its targets.

Low level attack in aircraft tactics we believe important. We need better control and instrumentation techniques to support this tactic.

Our aircraft use rocket ordnance extensively. We are not getting the life before use with this ordnance we should. Solid propellants for this and other applications may become unreliable just sitting on the shelf.

Counterinsurgency experience has highlighted specific problems. Here are a few. We need better ways to find
nd their supplies; specifically: (a) people de-
ecially under foliage
) underground tun-
ection on motorized
logy which, while
and easily main-

We need better power supplies for communicatio won't be satisfied until we have equipment that has i life, zero weight and never requires maintenance.

Progress has been made in image intensificati night viewing. We would like goggles with one tho yard range on a dark night, wide field of view, no w no trouble.

I hope that you will agree from this list that we not yet run out of challenging opportunities for ou technical people.

Research and Exploratory Developmen

The final area . . . is that of Research, or perhaps accurately, the technical area supported by the Res and Exploratory Development budget categories. . is from this area that we seek the ideas that eventually form the foundation of our future militar tems. It is also to this area that we look to avoid te logical surprises. I wish we could say where to co trate your efforts in order to turn up ideas that lead to developments as significant as the thermon device or the jet engine. Clearly, I can't and it wou a disservice to try. The best we can do is to support creative people, set an atmosphere stimulating to me defense applications with innovation, and guarante audience at any level to the individual with a revolu ary idea.

Finally let me close by restating how misleading it be to predict trends in the future by generalization the experiences of the past. We emphasize reliability one way of achieving it is through simplification. Th of course, desirable, but in electronics we see two dev ments flowering rapidly that can completely change concept of what may be feasible in automatic syst The first of these is the technology of integrated circ The second of these developments is the machine asse of electronic modules into complete systems. . . .

But as so often is the case, a step forward in one d tion uncovers a bottleneck in another. As the comple of our electronic systems increases, we find that methods of directing (or programming) these com systems are creaking from overload. Programs (soft in trade parlance) are so complex that it may req years to discover that subtle errors remain in them. development of these programs requires such an inv ment that industry copyrights them.

We should like to devise methods of proving that a tain computer program actually performs some spec function. Such a method would eliminate costly and t consuming "debugging." In order to be able to prove a program works correctly, we need both a mathemat theory and automatic checking systems which use theory. We may be reaching the point where we nee develop a general problem solver able to solve the prob of how to improve itself. General problem solvers to are able only to prove simple mathematical theorems, p simple games, and do other trivial work. A general pr lem solver of the kind mentioned here would reach "critical mass" of automatic problem solving, and wo open up entirely new technological possibilities. A matter of fact, if it were good enough, it might advise us how to spend our RDT&E funds.

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MAY 1965

SPEAKERS CALENDAR

OFFICE OF THE SECRETARY OF DEFENSE

Hon. John T. McNaughton, Asst. Secretary of Defense (International Security Affairs), at Atlantic Community Roundtable, Brookings Institution, Washington, D. C., March 25.

Hon. Paul R. Ignatius, Asst. Secretary of Defense (Installations & Logistics), at NSIA Briefing, Chicago, Ill., March 31.

VAdm. J. M. Lyle, Dir., Defense Supply Agency, at NSIA Briefing, Chicago, Ill., March 31.

Mr. Paul H. Riley, Dep. Asst. Secretary of Defense (Supply & Services), at NSIA Briefing, Chicago, Ill., March 31.

Hon. Charles J. Hitch, Asst. Secretary of Defense (Comptroller), at University of California, Berkeley, Calif., April 5-9.

Maj. Gen. J. B. Bestic, Dep. Dir. for National Military Command System, Defense Communication Agency, at National Aerospace Electronics Conference, Dayton, Ohio, May 11.

ARMY

Lt. Gen. Walter K. Wilson, Jr., Chief of Engineers, U. S. Army, at American Society of Civil Engineers, Washington, D. C., March 23.

Brig. Gen. Ellis E. Wilhoyt, Jr., Asst. to the Chief of Engineers for NASA Suport, at Society of American Military Engineers, San Francisco, Calif., March 26.

Gen. Harold K. Johnson, Chief of Staff, U. S. Army, at Calvin Bullock Forum, New York, N. Y., March 30.

Lt. Gen. William W. Dick, Jr., Chief of Research & Development, U. S. Army, at U. S. Army Operations Research Symposium, Huntsville, Ala., March 30.

Brig. Gen. Walter E. Lotz, Jr., Dir. of Army Research, at U. S. Army Operations Research Symposium banquet, Huntsville, Ala., March 31.

Hon. Daniel M. Luevano, Asst. Secretary of the Army (Installations & Logistics), at NSIA Briefing, Chicago, Ill., April 1.

Maj. Gen. J. W. Sutherland, Jr., Commanding General, U. S. Army Test & Evaluation Command, at American Ordnance Assn. Meeting, Aberdeen Proving Ground, Md., May 17.

NAVY

Adm. D. L. McDonald, Chief of Naval Operations, at National Rifle Assn. Meeting, Washington, D. C., March 31.

Lt. Gen. L. F. Chapman, Jr., Chief of Staff, U. S. Marine Corps, at Marine Corps luncheon of the Annual Convention, Navy League of the United States, Washington, D. C., April 21.

Lt. Gen. J. P. Berkeley, Commanding General, Fleet Marine Forces, Atlantic, at the American Society of Naval Engineers, Washington, D. C., April 30.

AIR FORCE

Maj. Gen. D. R. Ostrander, Commander, Office of Aerospace Research, at 2nd Space Congress, Cocoa Beach, Fla., April 5.

Hon. A. H. Flax, Asst. Secretary of the Air Force (Research & Development), at American Institute of Aeronautics & Astronautics meeting, Palm Springs, Calif., April 6; at Notre Dame University, South Bend, Ind., April 14; at University of New York, Buffalo, N. Y., May 5.

Maj. Gen. R. L. Bohannon, The Surgeon General, USAF, at Industrial Medical Assn., Miami Beach, Fla., April 7.

Gen. B. A. Schriever, Commander, Air Force Systems Command, USAF, at General Dynamics/Astronautics Management Club, San Diego, Calif., April 15.

Maj. Gen. R. H. Curtin, Dir. of Civil Engineering, Hq. USAF, at Society of American Military Engineers Meeting, Chicago, Ill., April 20.

Lt. Gen. James Ferguson, Dep. Chief of Staff (Research & Development); Maj. Gen. R. L. Bohannon, The Surgeon General, USAF; and Brig. Gen. J. S. Bleymaier, Dep. Commander, Space Systems Div. for Manned Systems, AFSC, at Aerospace Medical Assn. meeting, New York, N. Y., April 26.

Maj. Gen. W. S. Steele, USAF, Dep. Commandant, Industrial College of the Armed Forces, keynote address at the National Security Seminar, Portland, Ore., April 26.

Hon. Leonard Marks, Jr., Asst. Secretary of the Air Force (Financial Management), at Society for Advanced Management Meeting, Los Angeles, Calif., May 12.

DOD Briefings Include Procurement Counseling

The remaining three unclassified Advanced Planning Briefings, jointly sponsored by DOD and the National Security Industrial Association, will be held in Chicago, March 31-April 1, Dallas, April 14-15, and Washington, D. C., April 28-29.

Supplementing the briefings, the DOD, joined by the Department of Commerce, the Small Business Administration, and major prime contractors, is offering procurement counseling to scientific and industrial community representatives in attendance This counseling service is offered for those interested on a scheduled basis in an area adjacent to the main briefings during the initial two days of the briefings. Arrangements have also been made for the procurement specialists and counselors to stay a third day if sufficient interest warrants. The procurement counseling is the sole activity on the third day.

The counselors from the Army, Navy, Air Force, and the Defense Supply Agency are present to discuss and explain the Defense procedures for source development and utilization; prime and subcontract opportunities (including a discussion of areas of shortages in competitive sources); the preference programs for set-asides for small business and labor surplus areas; the clause for subcontracting; and like dats. All these are discussed in terms of current Army, Navy, Air Force, and DSA Invitations for Bids and Requests for Proposals.

MEETINGS AND SYMPOSIA

April 1965

Support of Manned Flight Conference, April 21-23, at Biltmore Hotel & Engineer's Club, Dayton, Ohio. Sponsors: Air Force Systems Command & Aeronautical & Aerospace Industries Assn. Contact: Ray Parker (SEPIE), Air Force Systems Command, Wright-Patterson AFB, Ohio, telephone: 253-7111, Ext. 26119.

May 1965

Navy Underwater Research Program Conference, May 4, at Boca Raton, Fla. Sponsor: Industrial Research Institute of Durham, N. C. Navy Coordinator: Public Information Div., Office of Naval Material, Washington, D. C.

Conference on Ultrapurification of Solid-State Electronics Materials, May 6-8, at Waldorf-Astoria Hotel, New York, N. Y. Sponsors: Air Force Cambridge Research Laboratories and New York Academy of Sciences. Contact: Dr. A. F. Armington, Air Force Cambridge Research Laboratories (CRW), L. G. Hanscom Field, Bedford, Mass., telephone Area Code 617, CR 4-6100, Ext. 4086.

Second Aerospace Expandable Structures Conference, May 25-27, at Lafayette Club, Minneapolis, Minn. Sponsors: Air Force Propulsion Laboratory & Archer-Daniels Midland Co. Contract: Fred Forbes (APF), Air Force Propulsion Laboratory, Wright-Patterson AFB, Ohio, telephone: 253-7111, Ext. 25167.

Aerospace & Hydrospace Technical Symposium, May 25-28, at San Francisco, Calif. Sponsor: Northern Calif. Chapter of Society of Aerospace Material & Process Engineers. Navy Coordinator: Commanding Officer, Mare Island Naval Shipyard, and Public Information Div., Office of Naval Material, Washington, D. C.

June 1965

Conference on Environment Sensitive Mechanical Behavior of Materials, June 7-8, at Research Institute for Advanced Studies (Martin Co.), Baltimore Md. Sponsors: U. S. Army Research Office, Durham, N.C.; Research Institute for Advanced Studies (Martin Co.); and Physical Metallurgy Committee, American Institute of Mining Metallurgical, and Petroleum Engineers, Inc. Contact: Dr. A. R. C. Westwood for scientific matters; Mr. J. S. Fly for administrative matters; both at Research Institute for Advanced Studies (Martin Co.), 7212 Bellona Ave., Baltimore, Md., telephone 435-1100.

Symposium on Modern Mathematical Physics, June 7-9, at New York, N. Y. Sponsors: Air Force Office of Scientific Research & Society for Industrial & Applied Mathematics. Contact: Capt. J. Jones, Jr., (SRMA), Air Force Office of Scientific Research, Washington, D. C. 20333, telephone: OXford 6-1302.

International Symposium on Multivariate Analysis, June 14-19, at Dayton, Ohio. Sponsor: Aerospace Research Laboratories. Contact: Dr. P. R. Krishnaiah, Aerospace Research Laboratories (ARM), Wright-Patterson AFB, Ohio, telephone 253-7111, Ext. 36211.

Tenth Anniversary AFOSR Scientific Seminar: Science In The Sixties, June 14-25, at Cloudcroft, N. M. Sponsor: Air Force Office of Scientific Research. Contact: Mr. David L. Arm, Air Force Office of Scientific Research (SRGL), Washington, D. C. Attendance by DOD personnel. Others by invitation.

Fifth Berkeley Symposium on Mathematical Statistics & Probability, June 21-July 18, at University of California, Berkeley, Calif. Sponsors: Air Force Office of Scientific Research, Army Research Office, Office of Naval Research, National Institutes of Health, National Science Foundation, and University of California. Contact: Dr. R. G. Pohrer, (SRMM), Air Force Office of Scientific Research, Washington, D. C. 20333, telephone: OXford 6-5248.

Symposium of Fluid Mechanics & Heat Transfer Under Low-Gravity Conditions, June 24-25, at Lockh Missiles & Space Co., Sunnyv Calif. Sponsors: Air Force Office Scientific Research & Lockheed M siles & Space Co. Contact: Capt. L. Gregg, (SREM), Air Force Office Scientific Research, Washington, D. 20333, telephone: OXford 6-3425.

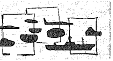
Seminar on Relativity Theory Astrophysics, June 24-July 22, Cornell University, Ithaca, N. Sponsors: Air Force Office Scientific Research, Army Resea Office, Atomic Energy Commissi National Science Foundation, and N tional Aeronautics & Space Admin tration. Contact: Maj. B. R. Agl (SRMA), Air Force Office of Sci tific Research, Washington, D. 20333, telephone: OXford 6-1302.

Relaxation Techniques in Cheml Kinetics, June 28-30, at State U versity of New York, Buffalo, N. Sponsors: Air Force Office of Scient Research, American Chemical Soci and State University of New Yo Contact: Dr. Ralph G. Wilkins, I partment of Chemistry, State Univ sity of New York, Buffalo, N. Y., te phone Area Code 716, 831-3905.

Conference on Small-Angle Ray Scattering, June 24-27, at S amore Conference Center, Syrac University, Raquette Lake, N. Sponsors: Department of the Ar Syracuse University Research In tute. Contact: Maj. Lawrence Monahan, Jr., U. S. Army Resea Office, Durham, Box CM, Duke S tion, Durham, N. C. 27706, telepho Area Code 919, 286-2285.

Second Interdisciplinary Conf ence on Electromagnetic Scatter (ICES-II), June 28-30, at Amhe Mass. Sponsor: Air Force Cambri Research Laboratory, L. C. Hansc Field, Bedford, Mass., telephone, A Code 617, CR 4-6100, Ext. 3633.

All meetings listed are Unclassified.



DEFENSE PROCUREMENT

Contracts of $1,000,000 and over awarded during month of February 1965:

DEFENSE SUPPLY AGENCY

11—**J. P. Stevens & Co., Inc.,** New York, N. Y. $1,360,200. 600,000 yards of tropical wool cloth. Rockingham, N. C. and Wallace and Greer, S. C. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

—**Pacific Mills, a div. of Burlington Industries, Inc.,** Halifax, Va. $1,377,000. 600,000 yards of tropical wool cloth. Raeford, N. C. and Clarksville, Va. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

19—**Eastman Kodak Co.,** Rochester, N. Y. $1,555,700. 9,400 rolls of aerial film. Rochester. Defense General Supply Center, Richmond, Va.

—**Royal Lubricants Co., Inc.,** Hanover, N. J. $1,006,710. 1,459,000 quarts of aircraft engine oil. Defense Fuel Supply Center, Washington, D. C.

23—**Socony Mobil Oil Co.,** New York, N. Y. $2,027,035. 1,000,000 barrels of fuel oil and 41,840 barrels of diesel fuel. Defense Fuel Supply Center, Washington, D. C.

—**Texaco, Inc.,** New York, N. Y. $1,722,750. 850,000 barrels of fuel oil. Defense Fuel Supply Center, Washington, D. C.

24—**Humble Oil & Refining Co.,** Houston, Tex. $4,455,400. 53,000,000 gallons of JP–5 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Socony Mobil Oil Co., Inc.,** New York, N. Y. $3,419,480. 39,249,000 gallons of JP–5 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Sun Oil Co.,** Philadelphia, Pa. $3,278,016. 36,620,000 gallons of JP–5 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Union Oil Co. of California,** Los Angeles, Calif. $2,221,177. 21,905,100 gallons of JP–5 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Coastal States Petrochemical Co.,** Corpus Christi, Tex. $1,890,655. 22,680,000 gallons of JP–5 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Edgington Oil Refineries, Inc.,** Long Beach, Calif. $1,069,729. 10,500,000 gallons of JP–5 jet fuel. Defense Fuel Supply Center, Washington, D. .C

25—**Debco Corp., Div. of Premier Oil Refining Co. of Texas,** Abilene, Tex. $5,846,079. 61,682,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Debco Corp., Div. of Premier Oil Refining Co. of Texas,** Abilene, Tex. $1,141,275. 11,780,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Shamrock Oil & Gas Corp.,** Amarillo, Tex. $3,739,511. 38,186,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Shamrock Oil & Gas Corp.,** Amarillo, Tex. $1,925,500. 20,000,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Golden Eagle Refining Co., Inc.,** Los Angeles, Calif. $3,003,834. 31,260,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**MacMillan Ring-Free Oil Co.,** Los Angeles, Calif. $2,890,562. 20,285,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Coastal States Petrochemical Co.,** Corpus Christi, Tex. $2,868,535. 30,560,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Bell Oil & Gas Co.,** Tulsa, Okla. $2,800,409. 34,650,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Delta Refining Co.,** Memphis, Tenn. $2,383,921. 25,085,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Sioux Oil Co.,** Newcastle, Wyo. $1,884,800. 16,000,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Leonard Refineries, Inc.,** Alma, Mich. $1,877,982. 19,735,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Howell Refining Co.,** San Antonio, Tex. $1,656,530. 17,478,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Crystal Flash Petroleum Corp.,** Indianapolis, Ind. $1,322,315. 12,350,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Northwestern Refining Co.,** St. Paul Park, Minn. $1,297,773. 14,367,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Cardinal Transports, Inc.,** San Antonio, Tex. $1,079,062. 11,625,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Tesoro Petroleum Corp.,** San Antonio, Tex. $1,046,608. 9,800,000 gallons of JP–4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

Contract Index

Contract information is listed in the following sequence: Date—Company—Dollar Value—Material—Location of Work Performed—Contracting Agency

ARMY

2—**Atlantic Gulf & Pacific Co.,** New York, N. Y. $2,268,296. Dredging work on the Houston Ship Channel Project. Harris County, Tex. U. S. Army Engineer Dist., Galveston, Tex.

5—**Bell Helicopter Co., div. of Bell Aerospace Corp.** Fort Worth, Tex. $3,469,510. UH–1E helicopters. Fort Worth. U. S. Army Aviation Command (AMC), St. Louis, Mo.

—**Reed & Martin International, Inc.,** Honolulu, Hawaii. $2,060,538. Construction of 100 4-bedroom family housing units. Schofield Barracks, Hawaii. U. S. Army Engineer Dist., Honolulu, Hawaii.

—**Scovill Mfg. Co.,** Waterbury, Conn. $2,257,685. Metal parts for bombs. Waterbury. Procurement Dist. (AMC), Boston, Mass.

8—**Chaney & James Construction Co., Inc.,** Richardson, Tex. $4,353,000. Construction of a vehicle service and vertical checkout building and a barge service building at the NASA Test Facility, Hancock County, Miss. Dist. Corps of Engineers, Mobile, Ala.

—**Bauer Dredging Co., Inc.,** Port Lavaca, Tex. $1,129,279. Dredging work on the Matagorda Ship Channel Project. Corpus Christi, Tex. U. S. Army Engineer Dist., Galveston, Tex.

9—**Jahncke Service, Inc.,** New Orleans, La. $1,436,600. Construction work on the Atchafalaya Basin Floodway Project. Napoleonville, La. U. S. Army Engineer Dist., New Orleans, La.

—**Sylvania Electronics Systems, Sylvania Electric Products, Inc.,** Needham Heights, Mass. $7,500,000. Classified electronic equipment. Needham Heights. Electronics Command (AMC), Ft. Monmouth, N. J.

—**Oakland Construction Co.,** Salt Lake City, Utah. $1,294,800. Construction of a MINUTEMAN engineering test facility. Hill AFB, Ogden, Utah. Sacramento Dist. Corps of Engineers, Sacramento, Calif.

10—**Global Associates,** Oakland, Calif. $17,334,517. Support services at the Kwajalein Test Site, Pacific. Redstone Arsenal (AMC), Huntsville, Ala.

—Atlas Construction Co., Inc., Ruston, La. $2,018,240. Construction work on the Mississippi River and Tributaries Channel Improvement Project. St. Francisville, La. Dist. Corps of Engineers, New Orleans, La.

11—Great Lakes Dredge & Dock Co., Chicago, Ill. $4,289,900. Dredging work on the Calumet River Navigation Project. Chicago Dist. Corps of Engineers, Chicago, Ill.

12—Bauer Dredging Co., Inc., Port Lavaca, Tex. $1,040,711. Work on the Arkansas River and Tributaries Project. Grady, Ark. Dist. Corps of Engineers, Little Rock, Ark.

15—Warrior Constructors, Inc., Houston, Tex. $3,224,815. Construction of a project engineering facility at the NASA Manned Spacecraft Center. Houston, Tex. Dist. Corps of Engineers, Fort Worth, Tex.

16—Jahncke Service, Inc., New Orleans, La. $1,691,740. Dredging work on the Galveston Harbor and Channel, Texas, Project. Galveston, Tex. U. S. Army Engineer Dist., Galveston, Tex.

—Hesse Eastern Div., Norris Thermador Corp., Everett, Mass. $1,735,696. 105-millimeter projectiles. Brockton, Mass. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

17—Alonzo Cothron, Inc., Islamorado, Fla. $1,096,310. Construction and excavation work on the Central and Southern Florida Flood Control Project. Osceola County, Fla. Dist. Corps of Engineers, Jacksonville, Fla.

—Standard Dredging Corp., New Orleans, La. $3,119,942. Work on the Mississippi River and Tributaries Channel Improvement (dredging) Project. Memphis, Tenn. Dist. Corps of Engineers, Memphis, Tenn.

—Bell Aerosystems Co. div. of Bell Aerospace Corp., Tucson, Ariz. $17,903,185. Services for the operation, maintenance, future development, and modernization of the Electro-Magnetic Environmental Field Test Facility. Ft. Huachuca, Yuma Proving Ground, and Gila Bend, Ariz., and other related test sites. Electronic Proving Ground (AMC), Ft. Huachuca, Ariz.

—Beech Aircraft Corp., Wichita, Kan. $2,582,250. Fixed-wing airplane trainers. Wichita. Aviation Command (AMC), St. Louis, Mo.

18—Martin K. Eby Construction Co., Inc., Wichita, Kan. $18,498,571. Construction work at Lock and Dam No. 5, Arkansas River Navigation Project. Pine Bluff, Ark. U. S. Engineer Dist., Little Rock, Ark.

—Johnson Machine Works, Inc., Chariton, Iowa. $1,438,630. Installation work on the Arkansas River Navigation Project. Pine Bluff, Ark. U. S. Army Engineer Dist., Little Rock, Ark.

—Butler Mfg. Co., Minneapolis, Minn. $1,257,564. 101 four-wheel semi-trailer tanks. Minneapolis. Chicago Procurement Dist. (AMC), Chicago, Ill.

—Frazier Davis Construction Co. and Gamco, Inc., St. Louis, Mo. $3,247,534. Construction work on the Missouri Flood Protection Project. St. Louis. Dist. Corps of Engineers, St. Louis, Mo.

—Construction Aggregates Corp., Chicago, Ill. $3,075,000. Dredging work on a section of the Chesapeake and Delaware Canal Project. Summit Bridge, Del. Dist. Corps of Engineers, Philadelphia, Pa.

—Cone Brothers Contracting Co., Tampa, Fla. $1,233,605. Construction work on the Cross Florida Barge Canal Project. Inglis, Fla. Dist. Corps of Engineers, Jacksonville, Fla.

19—Chamberlain Corp., Scranton, Pa. $3,518,719. 8-inch projectiles. Scranton Army Ammunition Plant. U. S. Army Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—E&I, Inc., Fort Lauderdale, Fla. $2,456,218. Construction and excavation work on the Central and Southern Florida Flood Control Project. Broward, Hendry, and Collier counties in Fla. Dist. Corps of Engineers, Jacksonville, Fla.

—James & Hardy, Montevallo, Ala. $1,460,877. Construction of three classroom buildings. Ft. Rucker, Ala. Dist. Corps of Engineers, Mobile, Ala.

—General Motors Corp., Cleveland, Ohio. $1,08
Vehicle engineering services for the M109
propelled howitzer, with 155mm gun. Cleveland.
curement Dist. (AMC), Cleveland, Ohio.

—General Dynamics/Pomona div. of General Dyn
Corp., Pomona, Calif. $3,552,518. Continuatior
completion of the Feasibility Validation Progr
the MAULER weapon system. Pomona. Los A
Procurement Dist. (AMC), Pasadena, Calif.

23—Honeywell, Inc., Hopkins, Minn. $1,076,683. Am
tion and special tooling. Twin Cities Army Am
tion Plant, New Brighton, Minn. Ammunition
curement & Supply Agency (AMC), Joliet, Ill.

24—Algernon Blair, Inc., Montgomery, Ala. $8,71
Construction of 10 EM barracks with support
ities. Ft. Gordon, Ga. Engineer Dist., Savannah

25—Codell Construction Co., Winchester, Ky.; Oman
struction Co., Nashville, Tenn.; and Hardaway
tracting Co., Columbus, Ga. $9,898,561. Constru
and excavation work on the Fishtrap Reservoir
ect in Kentucky. Pikeville, Ky. Dist. Corps of
neers, Huntington, W. Va.

—Whittenberg Engineering & Construction Co.,
Louisville, Ky. $4,474,356. Construction of troop
ing and supporting facilities. Ft. Knox, Ky.
Army Engineer Dist., Louisville, Ky.

—Hensel Phelps Construction Co., Greeley, Colo.
464,495. Construction of an EM barracks comple
support facilities. Ft. Carson, Colo. Engineer
Omaha, Neb.

26—General Motors Corp., Detroit, Mich. $2,879,992.
8-cylinder diesel engines for combat vehicles. De
Army Tank Automotive Center (AMC), Warren,

—Admiral Corp., Chicago, Ill. $1,837,008. Radar
veillance sets and ancillary items. Chicago.
Army Electronics Command (AMC), Ft. Monm
N. J.

—Universal Constructors, Albuquerque, N. M. $1,
700. Construction and excavation work on the
querque Div. Channel, Phase I Project. U. S.
Engineer Dist., Albuquerque, N. M.

—Appalachian Power Co., Inc., New York, N. Y.
100,000. Electrical power at Radford Army Amm
tion Plant, Radford, Va. Ammunition Procureme
Supply Agency (AMC), Joliet, Ill.

—Holston Defense Corp., Kingsport, Tenn. $7,663
Miscellaneous propellants. Holston Army Ammun
Plant, Kingsport. Ammunition Procurement & Su
Agency (AMC), Joliet, Ill.

—University of Illinois, Urbana, Ill. $1,200,000. Con
ation of an experimental and research program in
plied and electronic sciences. Urbana. Electronics
mand (AMC), Ft. Monmouth, N. J.

NAVY

1—Lockheed Missiles & Space Co., Sunnyvale, Calif.
601,966. Research and development on the POLA
missile re-entry system. Sunnyvale. Special Pro
Office.

—Ling-Temco-Vought, Inc., LTV Vought Aeronau
Div., Dallas, Tex. $5,028,500. A–7A aircraft. Da
Bureau of Naval Weapons.

2—Texas Instruments, Inc., Dallas Tex. $7,917,
SHRIKE missile guidance and associated equipm
Dallas. Bureau of Naval Weapons.

—Hayes International Corp., Birmingham, Ala. $1,
097. Tow targets for use in air-to-air missile f
training operations. Birmingham. U.S. Navy Purc
ing Office, Washington, D.C.

—Hughes Aircraft Co., Fullerton, Calif. $7,729,
Radar planar antennas and pedestals together
associated equipment for installation aboard n
ships. Fullerton. Bureau of Ships.

—Federal Electronic Corp., Paramus, N.J. $11,836,
Operational maintenance of government instrume
tion systems and associated range facilities on
Western Test Range, (formerly Pacific Mis
Range). U.S. Navy Purchasing Office, Los Ang
Calif.

General Electric Co., Defense Electronics Div., Utica, N.Y. $2,157,095. Spare parts to support the AN/APS-96 radar sets used on the E2A special electronics installation aircraft. Utica. U.S. Navy Aviation Supply Office, Philadelphia, Pa.

Douglas Aircraft Co., Inc., Long Beach, Calif. $1,300,000. TA-4E jet trainer aircraft. Long Beach. Bureau of Naval Weapons.

Miller Davis Co., Melrose Park, Ill. $8,078,000. Construction of four service school barracks and four recruit barracks at the Naval Training Center, Great Lakes, Ill. Dist. Public Works Officer, 9th Naval Dist., Bureau of Yards & Docks.

Franchi Construction Co., Newton, Mass. $3,023,000. Construction of 200 family housing units at the Naval Air Station, Quonset Point, R.I. Dist. Public Works Officer, 1st Naval Dist., Bureau of Yards & Docks.

Litton Systems, Inc., Guidance & Control Div., Beverly Hills, Calif. $2,206,688. Spare parts of the AN/ASN-56 computer systems used on the RF-4B reconnaissance aircraft. Beverly Hills. U.S. Navy Aviation Supply Office, Philadelphia, Pa.

Maxson Electronics Corp., Old Forge, Pa. $5,961,499. BULLPUP missile guidance, control, airframes and associated equipment. Old Forge. Bureau of Naval Weapons.

F.D. Rich Co., Inc., Stamford, Conn. $1,582,208. Construction of 100 family housing units at the Naval Ammunition Depot, Charleston, S.C. Dir., Southeast Div., Bureau of Yards & Docks.

F.D. Rich Co., Inc., Stamford, Conn. $4,562,000. Construction of 302 family housing units at the Naval Station, Long Beach, Calif. Dir., Southwest Div., Bureau of Yards & Docks.

Interstate Electronics Corp., Anaheim, Calif. $1,180,800. POLARIS test instrumentation equipment. Anaheim. Special Projects Office.

Bendix Corp., Eclipse Pioneer Div., Teterboro, N.J. $1,190,705. Spare parts for use on automatic flight control system of the T-A4E trainer aircraft. Teterboro. U.S. Navy Aviation Supply Office, Philadelphia, Pa.

Raytheon Co., Lexington, Mass. $2,506,348. Engineering services and flight testing in connection with the SPARROW III missile program. Flight testing will be done at Oxnard, Calif., and the remainder of the work performed at Bedford, Mass. Bureau of Naval Weapons.

—Del E. Webb Corp., Phoenix, Ariz. $6,424,000. Construction of 350 family housing units at Naval installations at Oahu, Hawaii. Dist. Public Works Officer, 14th Naval Dist., Bureau of Yards & Docks.

—Teletype Corp., Skokie, Ill. $1,306,749. Spare parts to support automatic teleprinter sets used in the Navy communications system. Skokie. U.S. Navy Purchasing Office, Washington, D.C.

Johns Hopkins University, Applied Physics Lab., Silver Spring, Md. $10,257,755. Research and development effort on missile programs. Silver Spring. Bureau of Naval Weapons.

—Bendix Corp., Eclipse Pioneer Div., Teterboro, N.J. $1,025,000. Components of the navigation system for the A-4E and EA-3B attack aircraft and C-130G cargo aircraft. Teterboro. U.S. Navy Aviation Supply Office, Philadelphia, Pa.

—Litton Systems, Inc., Canoga Park, Calif. $1,161,376. Studies on the Marine Corps Tactical Data System. Canoga Park. Bureau of Ships.

—Peterson Builders, Inc., Sturgeon Bay, Wis. $2,903,980. Construction of two wooden coastal minesweepers, MSC-314 and 315. Sturgeon Bay. Bureau of Ships.

—R.M. Wells Co., Inc., Quanah, Tex. $1,144,000. Conversion, rehabilitation, and improvement of Wherry Housing at the Naval Air Station, Corpus Christi, Tex. Dist. Public Works Officer, 8th Naval Dist., Bureau of Yards & Docks.

—International Harvester Co., Solar Div., San Diego, Calif. $1,542,230. Auxiliary power plants for Navy helicopters. San Diego. Bureau of Naval Weapons.

15—Fred Loffredo, Lafayette Hill, Pa. $2,550,000. Expansion of an inertial guidance maintenance facility for USAF at Newark Air Force Station, Ohio. Dist. Public Works Officer, 4th Naval Dist., Bureau of Yards & Docks.

—Raytheon Co., Lexington, Mass. $1,251,406. Modification kits for TARTAR missile control radar sets. Wayland, Mass. Bureau of Naval Weapons.

—Simplex Wire & Cable Co., Newington, N.H. $5,060,423. 150 nautical miles of submarine cable. Newington. U.S. Navy Purchasing Office, Washington, D.C.

—Yardney Electric Corp., New York, N.Y. $1,157,211. Batteries for use in torpedoes. Pawcatuck, Conn. U.S. Navy Purchasing Office, Washington, D.C.

—North American Aviation, Inc., Autonetics Div., Anaheim, Calif. $1,059,829. Engineering services on a submarine type inertial navigation system. Anaheim. Bureau of Ships.

—North American Aviation, Inc., Autonetics Div., Anaheim, Calif. $2,561,000. 194,408 manhours of direct labor in the conduct of a Ship Alteration Implementation Program as it pertains to Ships Inertial Navigation System developed by the firm for Fleet Ballistic Missile Submarines. Anaheim. Bureau of Ships.

16—University of Washington, Applied Physics Lab., Seattle, Wash. $1,443,000. Research and development in the field of underwater ordnance. Seattle. Bureau of Naval Weapons.

17—United Aircraft Corp., Norden Div., Norwalk, Conn. $2,290,866. Spare parts for radar sets used on the A-6A (INTRUDER) aircraft. Norwalk. U.S. Navy Aviation Supply Office, Philadelphia, Pa.

—Bendix Corp., Baltimore, Md. $17,805,335. Transmitter/receivers, receivers and associated equipment for installation aboard Navy ships. Baltimore. Bureau of Ships.

—Northrop Corp., Precision Products Dept., Norwood, Mass. $1,083,840. 120 units of POLARIS inertial reference integrating gyroscopes. Norwood. Special Projects Office.

—Honeywell, Inc., Aeronautical Div., St. Petersburg, Fla. $3,643,182. 558 units of POLARIS inertial reference integrating gyroscopes. St. Petersburg. Special Projects Office.

18—Clevite Corp., Clevite Ordnance Div., Cleveland, Ohio. $1,414,007. A research and development program on backup guidance and homing control system for use with the Mk 48 torpedo. Cleveland. Bureau of Naval Weapons.

—Norris Thermador Corp., Los Angeles, Calif. $2,452,275. Cartridge cases for 5-inch .38 caliber ammunition. Vernon, Calif. U.S. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—General Electric Co., Pittsfield, Mass. $1,165,700. Two POLARIS weapons control subsystem trainers. Pittsfield. Special Projects Office.

19—Sperry Rand Corp., Sperry Piedmont Div., Charlottesville, Va. $4,406,081. Radar sets and repair parts for installation aboard naval ships. Charlottesville. Bureau of Ships.

—Institute for Defense Analyses, Arlington, Va. $1,982,500. Research in the field of cryptology and directly related sciences. Arlington. Office of Naval Research.

—North American Aviation, Inc., Autonetics Div., Anaheim, Calif. $1,342,000. Field engineering services on Ships Inertial Navigation Systems equipment. Shipyards throughout the United States. Bureau of Ships

—AiResearch Mfg. Co., Phoenix, Ariz. $1,461,113. Modification kits designed to convert ground power units for A-6 attack aircraft and F-4 fighter aircraft. Phoenix. U.S. Navy Aviation Supply Office, Philadelphia, Pa.

23—Sperry Rand Corp., Ford Instrument Div., Long Island City, N.Y. $1,150,000. Engineering services for modification kits for TERRIER and TARTAR missile computers and ancillary equipment. Long Island City. Bureau of Naval Weapons.

24—Aerojet—General Corp., Azusa, Calif. $2,793,380 Engineering services and materials for the Mk 46 torpedo. Azusa. Bureau of Naval Weapons.

—United Aircraft Corp., Hamilton Standard Div., Windsor Locks, Conn. $6,802,416. Propeller systems for P-3A ORION and S-2E TRACKER aircraft. Windsor Locks. Bureau of Naval Weapons.

—Sperry Gyroscope Co., Syosset, Long Island, N.Y. $2,256,407. Various components of Ships Inertial Navigation System equipment on board Fleet Ballistic Missile Submarines. Syosset. Bureau of Naval Weapons.

25—ITT Gilfillan Inc., Los Angeles, Calif. $14,618,227. Eight shipboard radar sets and related equipment and services. Los Angeles. Bureau of Ships.

26—Lockheed Missiles & Space Co., Sunnyvale, Calif. $158,603,892. POLARIS A-3 missiles. Sunnyvale and Sacramento, Calif., and Baccus, Utah. Special Projects Office.

—Douglas Aircraft Co., Aircraft Div., Long Beach, Calif. $27,419,079. TA-4E aircraft (trainer version of A-4E SKYHAWK). Long Beach. Bureau of Naval Weapons.

—Ralph Englestad Construction Co., Inc., Las Vegas, Nev. $1,132,153. Construction of 74 family housing units at the Marine Corps Supply Center, Barstow, Calif. Dir., Southwest Div., Bureau of Yards & Docks.

AIR FORCE

1—Bendix Corp., Bendix Products Aerospace Div., South Bend, Ind. $1,589,048. Spare parts for F-101 aircraft. South Bend. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

2—Astronautics Corp. of America, Milwaukee, Wis. $2-762,050. Flight instruments for F-111, C-141, and B-52 aircraft. Milwaukee. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—Republic Aviation Corp., Farmingdale, N.Y. $1,521,-832. Modification of F-105 aircraft. Crestview, Fla. Mobile Air Materiel Area (AFLC), Brookley AFB, Ala.

3—Del E. Webb Corp., Phoenix, Ariz. $6,564,600. Construction of a 500-unit family housing project at George AFB, Victorville, Calif. Procurement Div., George AFB, Calif.

—General Electric Co., West Lynn, Mass. $5,106,000. Aircraft engines, spare parts, and related ground equipment. West Lynn. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—Radio Corp. of America, Electronic Data Processing Div., West Palm Beach, Fla. $1,846,451. Electronic data processing systems now on lease to the Air Force. Dir. of Procurement, Wright-Patterson AFB, Dayton, Ohio.

—Republic Aviation Corp., Farmingdale, N.Y. $3,756,-695. Modification kits and related items for F-105 aircraft. Farmingdale. Mobile Air Materiel Area (AFLC), Brookley AFB, Ala.

—Hayes International Corp., Birmingham, Ala. $2,009,-940. Production of modular bomb bay dispensers. Birmingham. Air Proving Ground Center, Dir. of Procurement, Eglin AFB, Fla.

—Magnavox Co., Fort Wayne, Ind. $2,430,342. Radio sets for C-141 aircraft. Fort Wayne. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—Columbia University, New York, N.Y. $1,855,621. Studies of sensors applicable to ICBM trajectory. New York. Air Force Office of Scientific Research, Washington, D.C.

4—Hercules Powder Co., Wilmington, Del. $3,100,000. Stage III MINUTEMAN motors. Magna, Utah. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

—Massachusetts Institute of Technology, Cambridge, Mass. $3,700,000. Research and development in the field of advanced electronics in support of Advanced Research Projects Agency. Lexington. Electronic Systems Div. (AFSC), L.G. Hanscom Field, Bedford, Mass.

—Boeing Co., Seattle, Wash. $6,233,200. T-50 aircraft engines, spare parts, and support equipment. Seattle. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

5—General Dynamics/Astronautics, San Diego, $1,057,000. Spare parts in support of the A'l AGENA boosters. San Diego. Space System (AFSC), Los Angeles, Calif.

8—North American Aviation, Inc., Autonetics Div. heim, Calif. $1,500,000. Components of the im MINUTEMAN guidance system. Anaheim. B Systems Div. (AFSC), Norton AFB, San Berna Calif.

—International Business Machines Corp., Rockvill $2,788,000. Engineering research to develop im computer programming techniques. Washington and Omaha, Neb. Space Systems Div. (AFSC Angeles, Calif.

—General Dynamics/Astronautics, San Diego, $1,280,000. ATLAS/AGENA space boosters. Diego. Space Systems Div. (AFSC), Los An Calif.

9—Sperry Rand Corp., Information & Communic Div., Carle Place, N.Y. $2,873,209. LORAN n tional systems. Carle Place. Systems Engin Group (AFSC), Wright-Patterson AFB, Dayton,

10—Republic Aviation Corp., Farmingdale, N.Y. $1 300. F-105 modification kits. Farmingdale. Air Materiel Area(AFLC), Brookley AFB, Ala.

—International Telephone & Telegraph Corp., Par N.J. $1,108,486. Spare components for electroni system (465L). Paramus. Electronic Systems (AFSC), L. G. Hanscom Field, Bedford, Mass.

11—Lockheed Missiles & Space Co., Sunnyvale, $8,052,000. AGENA-D launch services for Easter Western Ranges during calendar year 1965. Spac tems Div. (AFSC), Los Angeles, Calif.

12—International Business Machines Corp., Washi D.C. $1,914,915. Electronic data processing sy Poughkeepsie, N.Y. Dir. of Procurement, W Patterson AFB, Dayton, Ohio.

—R.P.R. Construction Co., Inc., and Harry M. stein, Phoenix, Ariz. $4,118,900. Constructio 250 units of FY 65 family housing at Cannon Clovis, N.M. Procurement Div., Cannon AFB, N.

15—General Electric Co., West Lynn Mass. $2,91 J-85 engines in support of the T-38 aircraft pro West Lynn. Aeronautical Systems Div. (A Wright-Patterson AFB, Dayton, Ohio.

17—General Dynamics/Electronics, Rochester, N.Y. 135,727. Mobile communications equipment. Roch Electronics Systems Div. (AFSC), L.G. Ha Field, Bedford, Mass.

—Curtiss-Wright Corp., Wright Aeronautical Wood-Ridge, N.J. $1,386,045. J-65 engine compo Wood-Ridge. San Antonio Air Materiel Area (A Kelly AFB, Tex.

—Lockheed Missiles & Space Co., Sunnyvale, Calif 300,600. Research and development work on a program. Sunnyvale. Space Systems Div. (AFSC) Angeles, Calif.

18—Massachusetts Institute of Technology, Camb Mass. $2,333,333. Basic research concerning m in intense magnetic fields. Cambridge. Office of space Research, Washington, D.C.

19—North American Aviation, Inc., Los Angeles, $8,150,000. XB-70 flight test program. Edwards Calif. Aeronautical Systems Div. (AFSC), W Patterson AFB, Dayton, Ohio.

—AC Spark Plug Div., General Motors Corp., Mich. $4,594,318. Work on the TITAN II gui system. Milwaukee, Wis. Ballistic Systems (AFSC), Norton AFB, San Bernardino, Calif.

—Lockheed Missiles & Space Co., Sunnyvale, $1,500,000. Research and development for a sat control network. Sunnyvale. Ballistics Systems (AFSC), Norton AFB, San Bernardino, Calif.

—Boeing Co., Seattle, Wash. $25,185,000. Asse installation, and checkout of MINUTEMAN mi for the Grand Forks AFB complex. Grand Forks, Ballistics Systems Div. (AFSC), Norton AFB, Bernardino, Calif.

23—**Morrison-Knudsen & Associates,** South Gate, Calif. $46,585,000. Construction of MINUTEMAN missile launch facilities at Malmstrom AFB. Great Falls, Mont. Army Corps of Engineers Ballistic Missiles Construction Office (AFSC), Norton AFB, San Bernardino. Calif.

—**Burroughs Corp., Defense & Space Group,** Paoli, Pa. $1,375,000. Radar maintenance and supply support. Paoli. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Bedford, Mass.

24—**Communication Systems, Inc.,** Paramus, N.J. $2,434,000. A design study program for the defense communications system. Paramus. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Bedford, Mass.

—**Curtiss-Wright Corp.,** Caldwell, N.J. $2,260,000. Work on the X-19 aircraft program. Caldwell. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

25—**American Electric, Inc.,** Paramount, Calif. $2,074,820. Production of ordnance. Paramount and Long Beach, Calif. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**Bendix Field Engineering Corp.,** Owings Mills, Md. $1,282,390. Conversion and modernization of radar equipment. Owings Mills. Rome Air Materiel Area (AFLC), Griffiss AFB, N.Y.

—**General Motors Corp., Allison Div.,** Indianapolis, Ind. $1,098,802. Spare parts for T-56 engines. Indianapolis. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

26—**Atlantic Research Corp.,** Duarte, Calif. $2,071,000. Development of special test vehicles for re-entry vehicle systems. Duarte. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

—**Bunker-Ramo Corp.,** Canoga Park, Calif. $1,235,000. A visual analysis display system. Canoga Park. Rome Air Development Center (AFSC), Griffiss AFB. N.Y.

—**General Dynamics Corp., Convair Div.,** San Diego, Calif. $1,500,000. Modification of ATLAS missiles. San Diego. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

—**Thiokol Chemical Corp.,** Brigham City, Utah. $3,449,400. GENIE rocket motors. Promontory, Utah. Ogden Air Materiel Area (AFLC). Hill AFB, Utah.

—**Liles Construction Co., Inc.,** Montgomery, Ala. $1,275,326. Construction of family housing at Eglin AFB. Valparaiso, Fla. Air Proving Ground Center (AFSC), Eglin AFB, Fla.

Advance Procurement Planning Marks First Year's End With Continued Money Savings

A program of Advance Procurement Planning designed to increase competitive bidding among Defense Supply Agency (DSA) industry suppliers is bringing continued monetary savings.

Initiated by the Executive Directorate, Procurement & Production, Headquarters DSA, more than a year ago, the program is now operating virtually on a DSA-wide basis and has been widely praised by industry as a significant innovation in the procurement field.

"Advance Procurement Planning is a program for providing industry suppliers with early information concerning future buying plans for major items on which large dollar procurements are anticipated," according to Harold J. Margulis, Chief, Procurement Division, Headquarters DSA, who is directing the program.

This advance information on anticipated DSA procurement informs industry of the amount and the timing of Government purchases and, in turn, enables industry to plan more effectively for the submission of bids and for the utilization of available production capability.

Advance Procurement Planning information is usually given to industry on a yearly basis, with the information brought up to date periodically. This increased lead time in purchasing helps not only to alert greater numbers of facilities in a particular industry as to what the Government plans to purchase, but also enables DSA procurement specialists to buy in more advantageous markets.

The planning is directed toward items which will remain in the supply system for some time. No advance procurement advice to industry is attempted on short-run and phase-out items or among new items which offer insufficient demand experience.

An example of procurement planning is the advance information given the clothing industry on the Government's intended purchase of men's cotton sateen trousers for the Army. Long before the contracts were offered for bidding, information was circulated to industry that in the third quarter of FY 1965 DSA planned to buy approximately 1.9 million pairs, and in the first quarter of the next year, 2.6 million pairs.

Other advance procurement information has been made available to industry on such varied items as photographic film, metal conduits, electron tubes, nylon flying helmets and men's coated nylon-twill raincoats.

Another technique used by DSA procurement personnel for saving funds is Market Analysis. The Supply Centers concentrate on selected items which can be purchased at better prices through taking advantage of seasonal and other factors influencing purchase prices. Entering the market to schedule Government production in the valleys between peaks in civilian production results in more favorable pricing for Government purchases. Maintaining the continuity of production lines avoids repetitive start-up costs. Taking advantage of quantity-price breaks is another technique for procurement cost savings. DSA is identifying regularly new opportunities for use of market analysis to more efficiently procure the Government's needs at lower costs.

CLARIFICATION

Due to several inquiries indicating misunderstanding of an article published on page 14 of the February issue of the *Bulletin*, the following clarification of second paragraph should be noted:

"Spurred on by Deputy Secretary Cyrus Vance, a new data language vocabulary is to be phased into use throughout the defense establishment. Transition will be gradual so as to cause minimum problems, but eventually all DOD data systems will use the same data language vocabulary composed of standard data elements and data codes. As a result of this effort, these systems will be able to interchange information and data far faster, more accurately and at less cost than at present."

This change points out that DOD Directive 5000.11 is speaking of a data vocabulary and language and not a computer programming langauge.

OFFICE OF THE SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

OFFICIAL BUSINESS

AMC Tests Industry Information Liaison Office

The U. S. Army Materiel Command (AMC) has begun testing a new Army Industry Materiel Information Liaison Office (AIMILO) Program designed to provide future market information in an effort to deepen and broaden industry competition for the Army's procurement dollar and bring down acquisition costs.

The program is built around an Advanced Planning Procurement Information (APPI) form which will be prepared on each end item to be procured by the expenditure of PEMA (Procurement Equipment & Missiles, Army) funds in the annual budget.

APPI data will include pertinent historical facts about the end item, current fiscal year procurement action, and the Army's planned procurements through the following six years. Included also will be statistics pertaining to quantities, monthly production rates and anticipated methods of procurement.

The APPI will be released to current bidders and sources cleared to receive it by the procuring agency's AIMILO; concurrently, the APPI will be synopsized for public media in order to advertise its availability to all industries. Those interested may obtain identical APPI at any one of the nine AIMILO's established for this purpose by presenting proof of security clearance required; or, lacking proof, by initiating actions that will enable them to receive APPI in the future.

For test purposes, AIMILO's have been established at the following AMC organizational elements: Electronics Command, Ft. Monmouth, N. J.; Missile Command, Huntsville, Ala.; Weapons Command, Rock Island, Ill.; Munitions Command, Dover, N. J.; Tank Automotive Center, Warren, Mich.; Mobility Equipment Center, St. Louis, Mo.; Aviation Materiel Command, St. Louis, Mo.; Los Angeles Procurement District, Pasadena, Calif.; San Francisco Procurement District, Oakland, Calif.

The Pilot Test of the AIMILO Program is being conducted by Brigadier General R. C. Conroy, AMC's Deputy Commanding General for Western Operations, Ft. Mason, San Francisco, Calif.

AFSC Documents Should Be Obtained From Procuring Agency

Difficulty is being experienced at Air Force System Command (AFSC) headquarters in meeting the requirements of contractors or prospective contractors for AFSC documents needed in responding to Requests for Proposals, etc. This is true particularly in the case of requests for AFSC/AFLC Manual 310-1, "Management of Contractor Data and Reports."

Some of the difficulty may stem from a lack of understanding of the official Air Force distribution procedures. According to prescribed procedures, the procuring activity or office administering the contract—the Air Force Contract Management District, the Air Force Plant Representative, System Project Office, or similar procuring agency—is responsible for providing copies of Air Force documents to contractors when required. Requests made directly through these channels should result in expeditious responses to contractor requests for necessary publications.

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April 1965

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PRESIDENT HAILS ARMED FORCES

This issue of the DEFENSE INDUSTRY BULLETIN goes to press as Servicemen and women everywhere prepare to celebrate their annual day on May 15. The text of President Johnson's statement on the occasion of this year's Armed Forces Day is reproduced below.

Our country today is stronger militarily than at any other time in our peacetime history. Our strength of arms is greater than that ever assembled by any other nation.

The successful execution of all our policies depends upon the ability to retain the talent and fitness of the outstanding men and women in the military services. Those who serve their country in the Army, Navy, Air Force, Marine Corps and Coast Guard, from whom we ask so much, are the cornerstone of our military might. Their contribution to our freedom and security is beyond measure.

As Commander-in-Chief, I join all of my fellow Americans in high tribute to our servicemen and women on Armed Forces Day, 1965.

DEFENSE INDUSTRY
BULLETIN

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The *Defense Industry BULLETIN* is published monthly by the Business & Labor Division, Directorate for Community Relations, Office of the Assistant Secretary of Defense (Public Affairs). Use of funds for printing this publication was approved by the Director of the Bureau of the Budget.

The purpose of the *BULLETIN* is to serve as a means of communication between the Department of Defense (DOD) and its authorized agencies and defense contractors and other business interests. It will serve as a guide to industry concerning official policies, programs and projects, and will seek to stimulate thought by members of the defense-industry team in solving the problems that may arise in fulfilling the requirements of the DOD.

Material in the *BULLETIN* is selected to supply pertinent unclassified data of interest to the business community. Suggestions from industry representatives for topics to be covered in future issues should be forwarded to the Business & Labor Division.

The *BULLETIN* is distributed each month to the agencies of Department of Defense, Army, Navy, and Air Force, and to representatives of industry. Request for copies should be addressed to the Business & Labor Division, OASD/PA, Room 2E813, The Pentagon, Washington, D.C. 20301, telephone, OXford 5-2709.

Contents of the magazine may be reprinted freely without requesting permission. Mention of the source will be appreciated.

NADGE Program Nears Procurement Contracting and Installation Phase

Development of the operational and technical characteristics of the NATO Air Defense Ground Environment System (*NADGE*) is completed, the Department of Defense has announced, and this program is now moving into the procurement, contracting and installation phase.

This large electronics complex has been funded under the NATO Infrastructure program at a total cost of $308 million. The U.S. share of this is $95 million, all of which will be spent in this country. Several companies have already announced their desire and capability to take on the job of weapon system consortium manager for the production and installation of NADGE.

To provide a single focal point in DOD for NADGE matters, the Secretary of Defense has designated the Assistant Secretary of Defense (Installations & Logistics) as the office of primary responsibility for the NADGE program. Within OASD (I&L), the Directorate for International Programs, headed by Mr. Donald S. Cuffe, OXford 7-5981, is the action office. Mr. William C. Kruse, OXford 5-3460, and Colonel John P. Healy, USAF, OXford 5-9341, are the action officers.

To assist in the management of the program, the U.S. Air Force has been designated the agency to provide, on behalf of the DOD, technical and administrative assistance to U.S. NADGE contractors. The Office of the Director of Production, Hq, USAF, headed by Colonel Walter E. Kelly, OXford 7-9876, is the Air Force action office.

The Office of the Defense Advisor, U.S. Regional Office for NATO Affairs, NATO Building, Paris, France, represents the U.S. on the NATO committees and panels handling NADGE, and provides the overseas representation and point of contact for U.S. contractors.

Industrial Security Office Opens in Columbus, Ohio

The new Defense Industrial Security Clearance Office (DISCO), which will provide for consolidation of industrial security clearance functions previously performed at more than 100 locations throughout the country, was opened March 8, 1965, in Columbus, Ohio.

DISCO will assume responsibility for clearing defense contractor employees who require access to classified information which are now processed by the three Military Services.

When the DISCO was opened on March 8 only the security clearance workload of the Defense Contract Administration Region, Philadelphia, was taken over.

During the next three months the workload for industrial clearances, nation-wide, will be turned over to DISCO in increments. By the end of June, all personnel industrial security clearances will have been taken over from the Military Services and centered in DISCO. At that time, all defense contractors will be dealing directly with DISCO for security clearances of personnel.

Contractors will continue to deal with their present cognizant security offices and operate under the revised Industrial Security Manual until they are advised by their cognizant security offices to submit clearance requests to DISCO in Columbus, Ohio. Thereafter, they will deal directly with DISCO on personnel clearance matters.

Establishment of DISCO is part of the Department of Defense plan to consolidate in 1965, under the central management of the Defense Supply Agency, organizations of the Military Departments engaged in contract administration services.

The new office will be directed by Colonel Lachlan M. Sinclair, USA.

AF Management of Engineering Data

by

Lt. Col. William O. Rennhack, USAF

A fundamental principle of management is that proposed improvement, or any changes, must be based on a *need*. This need must be soundly based on facts supporting the need. Having established the need, alternative courses of action to fulfill it must be analyzed on the basis of cost versus the effectiveness of each proposed course.

If there ever was a *need* in the military complex, it was the need for a disciplined attack on the defense paperwork jungle. This came to a head, after a tidal wave of industry criticisms, at the Air Force Systems Command's (AFSC) Monterrey Conference in May 1962. General Schriever, Commander, AFSC, recognized the importance of this deficiency and responded by chartering the Data Management Working Group. The new concepts developed by this group which changed the previous procedures were based on *need*. The sheer volume of paper had to be stopped. A selective procedure for limited acquisition of essential data was adopted. No longer could the government afford the luxury of buying all data to support all missions on all contracts.

U.S. SUPT. OF DOCS.

Lt. Colonel William O. Rennhack, USAF
Data Management Officer
Hq., Air Force Systems Command

During the past three years, the Air Force has made extensive studies of their technical data requirements. This included costs, improved techniques of preparing data and an analysis of user need. Data review boards were formed to insure that only minimum requirements were placed on contract. The most frustrating problem was the infinite varieties of source documents for acquiring data. Data was called for in ASPR clauses in the general provisions of the contract, narratively interspersed throughout the work statement of the contract and, of course, referenced in endless supporting specifications, exhibits, etc.

In March 1964, the Air Force published the 310–1 series of manuals and regulations which established control of Contractor Furnished Data. Requirements for data had to be listed on a DD Form 1423 and selected from an Authorized Data List (Vol II of AFSC/AFLC Manual 310–1). This technique gave instant visability to the myriad of data requirements. The authorized Data List contains some 300 discrete items of data in 13 categories. Each data item states the requirement. It is not a registry of acceptable specifications, or an abstract which calls out a list of supporting applicable documents. Each data item is a specification for data only. When this authorized Data List was prepared, rather than go to the functional area of primary responsibility and ask them what data should be listed, the Systems Program Director was asked, "What data do you need to do your job?" After reviewing some 9,000 detailed data requirements in documents, only 300 are now considered necessary for standard application.

Contractors are just as anxious to reduce the delivery of paper as the Government. Some have estimated that the weight of the paper delivered in the past has exceeded the weight of the product. The heart of a contractor's system for controlling the development and production of his product is the engineering control and release procedure. Control of drawings are a major portion of this procedure. Drawings are not only diagrams but are actually an intelligence bank for control and communication of the configuration, its materials and methods of manufacture. For example, they state processes, tolerances, manufacturing techniques and also reference applicable specifications and other vital information.

Literally millions of drawings are required to document our current weapons systems. The storage and retrieval by the Government of this data is often unnecessary, impractical and virtually impossible. It has been conservatively estimated that, to document existing military hardware, stacks of full size drawings 12 feet high would be required which would cover approximately 40 square miles. Even microfilming of these drawings does not solve the basic issue and indeed gives increased problems of visibility and legibility. The key to the problem is *need*. The government should acquire only specific types of drawings to meet precise needs.

The Engineering Drawing category in the Authorized Data List contains 18 data items. These can be selected as needed by the data manager and placed on the DD Form 1423. These data items supersede the requirements of MCP 71–77 which will become obsolete. One of the most important features of the new data items is that they do not necessarily require *delivery* of the data. For example, by placing "E–2" on contract requires the preparation of drawings in accordance with MIL–D–70327. If the contractor has a drawing practices manual which implements 70327, E–2 tells the contractor that the drawings he prepares for his own use are acceptable to the Air Force.

In the past, the Government had to acquire the drawings in order to establish "rights" for the design information when developed at Government expense. In May 1964, Defense Procurement Circular #6 was published which divorced "rights" from "requirements" for data. In effect, the Government did not have to get delivery of drawings in order to establish rights for the drawings which disclosed design information.

Reprocurement Data is one of the most controversial issues which has chronically plagued the Government. One problem, of course, is to clearly identify those items which were developed at Government expense versus those which were developed at private expense or procured from vendors at private expense. Many times the distinction is unclear especially when data contains processes and techniques applied generally across the contractor's product. The Air Force has no intention of acquiring data delivered with limited rights and using it for reprocurement. On the other hand, every effort will be made to get a reprocurement data package for those products where the Government funded the R&D effort. Competitive reprocurement can be expected when the design has been established and follow on quantities can be produced by a responsive industry.

General Bradley, Commander, Air Force Logistics Command (AFLC), has fought the paper mountain for many years. He is particularly concerned about adequate reprocurement data. AFLC Pamphlet 70–2, "Competition with Confidence," explains his position. Data Item P–14 gives the contractor a voice in determining the method by which components should be procured. MIL–STD–789 will implement this concept for all the services.

With a clear forthright data procedure, the Air Force can

(*Continued on Page* 18)

Defense Contract Administration Unified

For those industries who do business with the Government, life in 1965 will steadily become easier.

This is the prediction of the Contract Administration Services (CAS), which got its start in June 1964 as the unified Government organization to deal with contractors in administration of assigned contracts. Constituting a separate but parallel mission within the Defense Supply Agency (DSA), the CAS will operate in coordination with the Agency's other missions in supply and service management and the administration of assigned defense programs.

This new organization and concept came into being when Secretary of Defense Robert S. McNamara directed that a study be made for the purpose of determining how field contract administration was being performed and what could be done to improve it. Called Project 60, the study had the following three objectives:

1. Improve management of contracts in the field.
2. Decrease operating costs.
3. Minimize Government controls over industry.

Detailed observation and analysis of the administration of contracts in the field were made by a joint task force over a period of about a year. Then a report was submitted to the Secretary of Defense which outlined three steps for improving the performance of contract administration services as follows:

1. Certain immediate improvements within the framework of organizatic they then existed.
2. Consolidation of cc administration servi regions throughou United States.
3. Expansion of conso contract administı services for major w systems plants, susc to administration by an organization.

The Secretary of Defen proved the first two reco dations and announced a test would be initiated in state region with headqu at Philadelphia and the tion of a national pl group for nation-wide cor tion. He directed that th recommendation be inde deferred.

Detroit CAS Region Established

The Detroit Contract A istration (CAS) Region was lished on April 1. It will p contract administration on d contracts in the state of Mi with headquarters at 1580 Grand Boulevard, in Detroit

The principal organizatior solidated into the Detroit Region are the Detroit Arm curement District, Detroi Force Contract Managemen trict, Detroit Navy Inspec Material and the Grand Air Force Contract Mana Office. Colonel W. E. Besse, is the Director of the Detro gion.

Detroit is the second CA gion to be established United States of the planned. The Philadelphia covering the five-state ar Delaware, Maryland, so New Jersey, most of Pennsy Virginia, West Virginia a District of Columbia, was dated last year.

The new concept began hold in June 1964 wi

(*Continued on Pa*

Tools for the Man in the Sea

by

Captain Lewis B. Melson, USN

Capt. Lewis B. Melson, USN
Director, Naval Applications Group
Office of Naval Research

Last summer four Navy divers lived for 11 days in a 40-foot long chamber at the bottom of the ocean 30 miles off Bermuda at a depth of 193 feet. Not only did the men make their home in the chamber called SEALAB I but they emerged periodically each day to perform various tasks in the surrounding area. Never before had divers worked for such long periods in water as deep as this. Yet SEALAB I was only the first phase of a long-range experimental program conducted by the Office of Naval Research which is expected to make it possible eventually for divers to work and live at a depth of 1,000 feet and conceivably at even greater depths.

Late next summer SEALAB II will take place one mile off La Jolla, Calif., in 250 feet of water. This time two 10-man teams of divers, which may include civilian as well as Navy personnel, will inhabit SEALAB II, a 50-foot structure, for periods of 15 to 30 days. A major objective will be to determine how much useful work can be accomplished in the ocean environment at that depth.

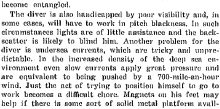
The SEALAB is now part of the Man-in-the-Sea effort of the new Deep Submergence Systems Program in the Navy's Special Projects Office. It is part of the objective of developing deep sea salvage and submarine rescue facilities. At the present time, such work is restricted by the fact that at depths below 100 feet only a few minutes work requires long periods of decompression. Obviously, this severely limits the amount of work that can be accomplished in one day. The length of undersea time available to a diver is also limited by the amount of breathing gas carried in his SCUBA tanks. The deeper he goes, the more rapidly he uses up the supply in his tanks. In the SEALAB concept the diver lives in a home placed at the depth at which the work is to be performed. This allows him to draw on an unlimited supply of breathing gas and he does not have to be concerned with decompression until the job has been completed.

Although the SEALAB concept overcomes the major difficulties in attempting to extend the capabilities of divers to work at considerable depths for extended periods of time, there are still the problems of how much and what kind of work the diver can accomplish at such depths. In particular, special tools must be devised if the diver is to perform tasks that will make worthwhile the effort and expense required to place him down there in the first place.

First of all, the buoyancy of the water counterbalances gravity to such an extent that the diver has to operate much like an astronaut out in space working on the outside of his space vehicle. In fact, the diver has a greater problem since he must contend with the density of the water while the astronaut has no pressure on him at all. Basically, however, the gravity effect is quite similar. Unless he can see or stand on the ocean bottom, he has no orientation and literally does not know which end is up. Any violent movement on his part, such as associated with cutting, pounding, or twisting will tend to propel him away from his work. If a tool he is using slips from his grasp, it will float away (in contrast to space where anything that is let loose will stay put). If the diver uses lines to attach the tools to himself, the lines can become entangled.

The diver is also handicapped by poor visibility and, in some cases, will have to work in pitch blackness. In such circumstances lights are of little assistance and the backscatter is likely to blind him. Another problem for the diver is undersea currents, which are tricky and unpredictable. In the increased density of the deep sea environment even slow currents apply great pressure and are equivalent to being pushed by a 700-mile-an-hour wind. Just the act of trying to position himself to go to work becomes a difficult chore. Magnets on his feet may help if there is some sort of solid metal platform available on which to work. Even standing on the ocean bottom is only possible if it is firm enough and not loose, mucky sediment which can be as dangerous as quicksand.

Any tools to be developed for undersea work must be designed with these conditions in mind. They must be simple and versatile so that any tool kit carried by the diver can be manageable in size. They must be resistant



SEALAB I aquanaut securing the entry hatch which leads to the oxygen-helium atmosphere lowering operation off the Bermuda Coast in July 1964.

(Continued on Page 18)

American Business and U.S. Government Cooperate in $6 Billion Military Export Market

Mr. Henry J. Kuss, Jr., Deputy Assistant Secretary of Defense for International Logistics Negotiations, reports that our sales of military equipment to our Allies have reached $6 billion during the past four years and that the military export program will probably provide a total of $10 billion of military equipment through the sales route by the end of 1971.

The principal countries involved in the $6 billion of past sales are reported as follows: Italy, Germany, United Kingdom, Australia and Canada $4.4 billion; Austria, Belgium/Luxembourg, Denmark, France, Netherlands, Norway, Spain, Sweden, Switzerland and NATO organizations $1.1 billion; India, Iran and Saudia Arabia and other Near East countries $0.3 billion; Japan and New Zealand $0.3 billion; 20 or more other countries—about $0.3 billion.

In pursuing a vigorous program of encouraging such exports of strategic materials and equipment to friendly foreign governments, the United States serves three important needs.

- The first is to strengthen our Allies, militarily, consistent with our own political-economic objectives.
- The second is to promote cooperative logistics and standardization with our Allies.
- The third is to offset the current unfavorable balance of payments resulting, largely, from U. S. military deployments abroad. How effective military exports have been in this respect is shown by the fact that with a rise of such exports to 41% of our defense expenditures abroad last year, the net adverse effect of such expenditures was reduced from a high of $3 billion in 1961 to $1.7 billion.

"Nevertheless," Mr. Kuss stresses, "the challenge of this market makes present American competition mild by comparison, and demands unique qualifications. These include men of strong motivation, high initiative and intelligence, plus adequate financing."

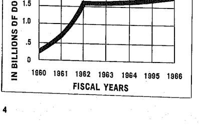
Thus far the potential for this market has not been reached. Estimates indicate that this could go as high as $5.5 billion over the next three years alone. This potential is being further enlarged by the vast sums—between $3 and $4 billion in 1965, for example—being spent on research to develop potentially exportable military equipment. In contrast, the United Kingdom will spend $400 million, Germany $180 million and France $175 million.

Dr. Eugene G. Fubini, Assistant Secretary of Defense (Deputy Director of Research & Engineering), recently stated that 21 current research programs conducted under this plan give strong promise of breakthrough.

Needed: A New Breed of Management

The most critical factor bearing on the success or failure of the military export program is the development of highly qualified executives possessing what Mr. Kuss calls "a very high I^3 rating."

"A high 'I^3' rating," he explains, "designates the combination of strongly developed senses of initiative, intelligence and insight. Of the three, insight is the most essential ingredient." All the men who assist him in administering the military export program, Mr. Kuss pointed out, rate exceedingly well on the "I^3" scale. These men are:



- Leonard D. Dunlap, Mr. Kuss' deputy. He often acts as head of the office in place of Mr. Kuss since travel is a necessity to maintain a high "I^3" rating.
- Leonard A. Alne, Director of Red Negotiating Team. He is responsible for international logistics negotiations in Japan, Canada, Taiwan, Sweden, Denmark, Norway, Thailand, Burma, Australia, Malaysia, South Africa, France, New Zealand and NATO.
- Hugh J. Gownley, Director of White Negotiating Team. He is responsible for all aspects of our German cooperative logistics program.
- Frank J. Fede, Director of Blue Negotiating Team. He is responsible for Italy, Spain, Argentina, Brazil, Chile, Mexico, Venezuela, Peru, Colombia, Ecuador, Belgium, Netherlands, and miscellaneous countries worldwide.
- Peter E. Feigl, Director of Gray Negotiating Team. He is responsible for the United Kingdom, Switzerland, Austria, India, Israel, Lebanon, Saudi Arabia, Turkey, Iran, Iraq, Jordon, Greece and Pakistan.

In addition to the members of his own staff, Mr. Kuss also looks to three Military Service organizations for their assistance in implementing their portions of the military sales program on a world-wide basis:

- As Director of International Logistics, Office of the Deputy Chief of Staff for Logistics, Department of the Army, Brigadier General Howard K. Eggleston is responsible for the Army portion of the military sales program on a world-wide basis.
- In the Air Force, Colonel George Johnson, Assistant for Mutual Security, Office of the Deputy Chief of Staff, Systems & Logistics, directs the Air Force portion of the Military Assistance Program, both with respect to Grant Aid and military sales.
- Captain B. D. Claggett, Director of the Materiel and International Logistics Division in the Office of the Chief of Naval Operations, directs the Navy's foreign military sales and international logistics programs.

Each of the above directs the sales activities in his department and is responsible for harnessing its resources to the military export program.

Adequate Financing Essential—and Available

Few corporations are anxious to shoulder the cost of production without progress payments in advance of delivery. About 70% of the potential military export orders, Mr. Kuss notes, is covered by such pay-as-you-go financing.

Another 20% of the orders need credit assistance of a short- or medium-term nature. For some nations this is to let them defer payment until after delivery; others need credit assistance in order to defer payment from one fiscal year to the next. Much of this may be obtained through private banks and the U. S. Government.

About 10% of those orders included in the estimate of the next five years' potential will need medium- to long-term financial credit from sources other than private banks. Congress has authorized such credit to be administered through the Defense Department when not available from other sources. During the next 10 years it is anticipated that such credit may reach $1.5 billion. However, these guarantees will be issued for military sales deemed solely to be in support of U. S. foreign policy and, with respect to developing countries, where the payments required in the sales agreement will not unduly interfere with that nation's economic development. Fees and premiums in connection with these credits will be adjusted in keeping with the customer-nation's financial risk status and the U. S. foreign policy considerations involved.

In general, U. S. Government financial guarantees will be rendered for sales by a U. S. exporter directly to an

TABLE I

SHORT TERM SALES GOALS

(IN MILLIONS – BY FISCAL YEARS)

	ACTUAL SALES			POTENTIAL SALES			TOTAL POTENTIAL
REGIONS	1962	1963	1964	1965	1966	1967	1965-67
EUROPE	$1405.8	$1342.8	$1088.2	$1453.6	$1297.0	$1274.1	$4024.7
NEAR EAST, SOUTHEAST ASIA, AFRICA	5.3	75.4	61.9	263.5	154.5	159.5	577.5
FAR EAST	104.5	104.9	262.1	138.1	171.6	170.6	480.3
WESTERN HEMISPHERE (includes Canada)	57.6	53.7	115.0	76.5	164.7	113.0	354.2
	$1573.2	$1576.8	$1527.2	$1931.7	$1787.8	$1717.2	$5436.7

eligible purchaser under certain conditions. One condition is when the exporter himself extends credit and financing. A second is when the exporter extends credit based on financing he himself has obtained. A third circumstance would be when no credit is extended by the exporter but the purchaser himself obtains needed funds through his own loan negotiations.

There is a second category of sales possibly necessitating U. S. Government credit guarantees. This consists of sales concluded by the U. S. itself. In one such case, credit is extended by the Government and refinanced through an eligible lender based on evidence of indebtedness received from the purchaser. Government credit guarantees would also be justified when the sales contract itself calls for payment on a cash or "dependable undertaking basis." In this case the purchaser gets funds to meet payments to the U. S. from an eligible lender, pursuant to a loan or credit agreement between the purchaser and the lender.

In urging American business to exploit fully the sales potential of military exports—a program, by the way, that is strongly endorsed by both the President and the Secretary of Defense—Mr. Kuss admonishes such businesses to be guided by the defense objectives of the program as well as by enlightened self-interest.

"The company that has approached the international market with solely a commercial point of view," he warns, "has fared poorly by comparison with the company that approaches the international market as a member of the defense team."

Future issues of the Defense Industry Bulletin will carry a series of articles on the interfaces of Government and Industry in International Logistics, i.e. the Military Export Market.

TABLE II

EXPENDITURE FORECAST

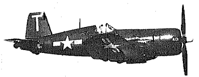
(IN MILLIONS)

Based on Fiscal Year projections of specific item forecasts and analyses of expenditures, this $10 to $15 billion potential may be found largely as follows:

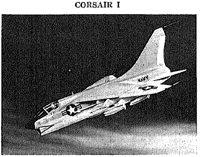
	FY 62 – 71 Minimum	Forecast Potential
EUROPE	$ 7,000	$10,000
FAR EAST	1,000	1,500
WESTERN HEMISPHERE (Includes Canada)	500	1,000
NEAR EAST, SOUTHEAST ASIA, AFRICA	500	1,000
OTHER COMMERCIAL (Not identifiable by region)	1,000	1,500
	$10,000	$15,000

New Navy Attack Aircraft Named Corsair II

The A–7A light attack aircraft (VAL) has been given the name CORSAIR II. The original CORSAIR was the F–4U, a single engine inverted gull wing, Navy and Marine Corps fighter-bomber used extensively in World War II and Korea.



CORSAIR I



CORSAIR II

The new CORSAIR II, a modified version of the F–8 CRUSADER, will be delivered to the Navy in the fall of 1965 and is expected to reach the fleet in the fall of 1966.

The original CORSAIR was manufactured by Chance-Vought Corp., Dallas, Tex., and the new CORSAIR II is produced by Ling-Temco-Vought, Inc., Dallas, Tex.

"Total Package" Concept Planned for C-5A Program

The Secretary of Defense has approved an Air Force proposal to acquire the C-5A transport aircraft under a new "Total Package" procurement technique.

Under the "Total Package" concept, one contract will be awarded on a competitive basis for development, production and lifetime support of the aircraft—including spare parts and ground support equipment. Assistant Secretary of the Air Force (Installations & Logistics) Robert H. Charles, in briefing the press on the new procurement method, stated, "The concept of total procurement is straightforward. It's simply based on the premise that you can set up the proper competitive atmosphere and define accurately what a system is to do. A suitable contract covering development, production and support can be let which will (1) protect the Government against huge overruns; (2) cause contractors to bid realistically for all phases of the program . . . and (3) . . . use the profit motive as the lever to obtain effective management on the part of the contractor."

The competitors for the airframe contract are Boeing, Douglas and Lockheed. For the engine contract, they are General Electric and Pratt and Whitney. The contract in both cases will be awarded to the competitor whose technical and price proposals are considered to provide the greatest overall value throughout ten years of operation.

The "Total Package" procurement technique represents a significant departure from past practices. It can be used in this case because development and production of the C-5A involve no large steps beyond the present technical knowledge of the aircraft industry, and an estimate of production costs can be made without extensive prior development. The Air Force is able to specify the desired performance with considerable precision, and with a reasonable expectation that it can be achieved. (Notwithstanding the dollar amount and duration of the program, the C-5A is one program on which it is reasonable to obtain competitive production commitments at the outset.)

In previous large programs, only development work has normally been awarded at the outset. Subsequently, the production work had to be awarded to the development contractor, on a non-competitive basis, unless the Government was willing to duplicate, at great cost in money and time, much of the work already performed. Thus, the company which won the development contract was for all practical purposes assured, without making any production commitments, of winning the much larger follow-on contracts, which frequently represent over 75% of the total program.

The formula for arriving at the winning competitor's ultimate profit, while providing a strong incentive for high quality at low cost, will not require the contractor to assume all the risk. There will be a sharing of costs above, and of savings below, the competitively established target cost.

The Government will benefit from the "Total Package" plan by realizing considerably lower overall system costs and better operational performance, through competition. In particular:

- It will require a tightening of design and configuration discipline, both in the specifications on which the competitors will submit proposals and in the work under the contract.
- It will largely eliminate unrealistic "salesmanship," including under-estimates of cost and over-estimates of performance, which is encouraged when bidders are required to make firm commitments on only a small portion of the total sale.
- Being committed to cost and performance figures for production units before detail begins, the contractors will have a strong motive to design for economical production, product reliability and simplicity of maintenance, all of which are strongly influenced by actions taken during the detail design period, and for which there is little inducement in the absence of a production commitment.
- The contractors will obtain supplies and services from the most efficient source, whether in-house or by outside contract and, if by outside contract, through competitive bidding, thus providing opportunities for efficient suppliers, including small businesses and those located in economically distressed areas.

The primary advantage to the aircraft industry is the creation of a competitive framework in which profit swings can be much larger than in non-competitive situations—a framework in which the truly efficient contractor can be adequately rewarded. Another advantage is that the contractor will have more responsibility, thereby permitting some relaxation of Government controls which are necessary when the constraints of competition are absent.

Col. Rankin Heads C-5A SPO

A System Program Office (SPO) for the C-5A heavy logistics transport aircraft has been established at the Air Force System Command's Aeronautical Systems Division at Wright-Patterson AFB, Ohio.

Colonel W. F. Rankin, Jr., is the System Program Director and head of the office. M. C. Chase is assistant director.

Three deputy directors to Colonel Rankin are: B. V. Lowry, for engineering; G. E. Oster for procurement; and P. R. Rudeseal (acting) for Test and Deployment. E. D. Monroe is acting Chief of the Configuration Management Division, and Lt. Colonel J. A. Loudermilk is Chief of the Program Control Division. C. B. Hargis, Jr., is Systems Engineering Director.

The SPO will direct all Air Force activities pertaining to the C-5A system throughout its development and testing phase up to the time it becomes part of the operational fleet.

There are other unique features in the proposed C-5A contract. Two of the most significant are:

- Although the engines will be bought by the Air Force directly from the engine company, which will be responsible for the specified performance of the engine as a separate unit, the aircraft manufacturer will be responsible for the performance of the aircraft as an integrated system, including the engines.
- The original contract will cover development, production and support for 58 operational airplanes. However, the Government may later decide to buy more. To prevent non-competitive procurement at such time, the contract will give the Government an option on additional airplanes at prices which can automatically be determined from the company's actual cost experience on previous C-5A's, in accordance with a formula established in the original competition.

The "Total Package" concept will be applied to other appropriate programs in the future and will greatly increase the amount of Air Force work awarded competitively. This is expected to produce more realistic bidding on performance and on cost, the lowest price for products of the desired quality, and an industry framework in which efficient contractors are rewarded appropriately.

ABOUT PEOPLE

DEPARTMENT OF DEFENSE

John M. Malloy was appointed Dep. Asst. Secretary of Defense (Procurement) to succeed **Graeme C. Bannerman**, who is now Asst. Secretary of the Navy (Installations & Logistics). Mr. Malloy assumed his new duties the first week in April. He is a retired Navy captain and during his service in the Navy held a variety of assignments in the procurement field. Since his retirement from active duty in July 1963 he was employed by North American Aviation, Inc., where he was Asst. Corporate Dir. responsible for assisting in the development of company contracting policies and their implementation.

RAdm. Charles A. Blick, SC, USN, Exec. Dir. of Procurement & Production, Defense Supply Agency (DSA), has been reassigned to succeed **RAdm. Jack J. Appleby** as Commanding Officer, Navy Ship's Store Office, Brooklyn, N. Y. Adm. Blick's successor will be announced at a later date.

In another key DSA personnel change, **RAdm. John W. Bottoms, SC, USN,** presently Force Supply Officer, Staff of Commander Service Force, Pacific Fleet, was named to succeed **Maj. Gen. Bruce E. Kendall, USA,** as Exec. Dir., Logistics Services, DSA. Gen. Kendall will become Exec. Dir. of Supply Operations at DSA headquarters.

Other new DSA assignments include: **Col. F. J. Henggeler, USAF,** currently Dir. of Planning & Management, at the Defense General Supply Center, Richmond, Va., will become Dep. Commander of the Center. He will succeed **Col. Charles A. Shaunesey, Jr., USA,** who is being reassigned to Department of the Army headquarters in June; and **Col. William Paule, USAF,** currently Asst. Exec., Hq., DSA, will become Commander, DSA Administrative Support Center and Staff Director, Administration, succeeding **Col. O. R. Rumph, USA.** Col Rumph will leave in April for an overseas assignment. **Col. James A. Cogswell, USAF,** has been assigned as Dir., Industrial Security, Defense Contract Administration Services.

Dr. Edward I. Salkovitz was appointed Dir. for Materials Sciences in the Advanced Research Projects Agency (ARPA) succeeding **Charles F. Yost.** In this position, Dr. Salkovitz will be responsible for the direction of a broad program of materials research conducted for ARPA by various university and industrial contractors. This research is generally in the field of Solid State Physics, Metallurgy, Chemistry and Structural Mechanics.

New assignments in the Defense Communication Agency are: **Col. John M. Johannes, USAF,** as Asst. for Command, Control & Communications Program Reviews; **Col. Dwane R. Valentine, USAF,** as Dep. Asst. Dir. of Operations.

Col. Carl E. Walker, USMC, has assumed duties as Chief, National Organizations Div., Directorate for Community Relations, Office of Asst. Secretary of Defense (Public Affairs), replacing **Col. Robert A. Carr, USA.**

ARMY

Stanley Rogers Resor has been nominated as Under Secretary of the Army. Prior to this appointment, Mr. Resor was a partner in the New York City law firm of Debevoise, Plimpton, Lyons & Gates, where he specialized in corporate law.

Lt. Gen. Harvey H. Fischer, Commanding General, III Corps, has been named Dep. Commanding General, U.S. Continental Army Command, to succeed the late **Lt. Gen. Edwin J. Messinger, Jr. Maj. Gen. Ralph E. Haines, Jr.,** has been nominated for promotion to rank of lieutenant general and will become Commanding General, III Corps.

Lt. Gen. W. K. Wilson, Jr., Chief of Engineers, will retire on July 1. **Maj. Gen. William F. Cassidy,** now Commanding General of the U.S. Army Engineering Center and Commandant of the U.S. Army Engineer School, has been designated to succeed Gen. Wilson as Chief of Engineers and nominated for promotion to lieutenant general.

Col. Harry W. Elkins is the new Commanding Officer of the U.S. Army Electronics Research & Development Activity, Ft. Huachuca, Ariz.

The new Commanding Officer of Dugway (Utah) Proving Grounds is **Col. William W. Stone,** previously assigned to the Special Projects Office, Joint Chiefs of Staff.

Col. Glenn H. Gardner has been assigned the Commanding Officer, Special Warfare & Civil Affairs Group, U.S. Army Combat Developments Command, replacing **Col. Richard J. Darnell.**

Lt. Col. Howard H. Cooksey has been appointed Chief, Combat Materiel Div., Directorate of Developments, Office of Chief of Research & Development.

New Army Project Manager assignments: At Hq., Army Materiel Command, Washington, D.C.—**William N. Yehle,** Project Manager Staff Officer, XM-561 (Gamma Goat); and **Alan Morningstar,** Project Manager Staff Officer, Generators. At U.S. Army Missile Command, Redstone Arsenal, Ala.—**Robert Whitley,** Dep. Project Manager, TOW weapon system; and **Earl R. Edmondson,** Dep. Project Manager, Shillelagh weapon system.

NAVY

Adm. Thomas H. Moorer will become Commander-in-Chief, Allied Naval Forces in the Atlantic, on May 1. He succeeds **Adm. Harold P. Smith,** who is retiring.

VAdm. Roy L. Johnson, nominated for promotion to admiral, will succeed Adm. Moorer as Commander-in-Chief of the U.S. Pacific Fleet. **RAdm. Paul P. Blackburn,** now Senior Member of the U.S. Armistice Commission in Korea, will succeed VAdm. Johnson as Commander of the Seventh Fleet. Adm. Blackburn was nominated for promotion to vice admiral while holding that post.

RAdm. Levering Smith, Technical Dir. of the Navy's Special Projects Office, has relieved **RAdm. Ignatius J. Galantin** as Dir. of the Special Projects Office. Adm. Galantin has succeeded **VAdm. Schoech** as Chief of Naval Material.

VAdm. John B. Colwell, Commander, Amphibious Force, Pacific Fleet, has been assigned to the position of Dep. Chief of Naval Operations (Fleet Operations & Readiness) as relief for **VAdm. Alfred G. Ward.** Adm. Ward was appointed U.S. Representative on the Military Committee and Standing Group of NATO.

RAdm. Charles S. Minter, Jr., presently Supt., U.S. Naval Academy, will become Dep. Asst. Chief of Staff for Plans & Policy, SHAPE, early this summer. **RAdm. Draper L. Kauffman,** now the Navy's Dir. of the Office of Program Appraisal, will become U.S. Naval Academy Supt. about the middle of June.

The following U.S. Marine Corps general officer reassignments to be made in May and June have been announced: **Maj. Gen. John H. Masters,** Asst. Quartermaster General will become Commanding General, Marine Corps Supply Center, Barstow, Calif. **Brig. Gen. Melvin D. Henderson,** now Asst. Chief of Staff, G-4, Hq., Marine Corps, will become Commanding General, First Marine Brigade, replacing **Brig. Gen. Marion E. Carl.** Brig Gen. Carl will be ordered to duty as Asst. Wing Commander, First Marine Aircraft Wing. **Brig. Gen. Lewis W. Walt** (selected for major general), present Dir. of the Marine Corps Landing Force Development Center, Quantico, will become Commanding General, Third Marine Div. He will replace **Maj. Gen. William R. Collins,** who will be ordered to Hq., Marine Corps.

Capt. Jack L. Appleby, SC, presently serving in the Navy Ship's Store Office, Brooklyn, N.Y., has been promoted to rank of rear admiral and assigned as Dep. Chief of Naval Material for Material & Facilities.

The following are recent Supply Corps officers assignments: **LCdr. D. Davidson, Jr., SC,** as Contract Administration Branch Officer, Aviation Supply Office, Philadelphia, Pa.; **Cdr. G. G. Dunn, SC,** as Head, Small Business Div., Office of Naval Material.

AIR FORCE

Gen. **Dean C. Strother**, formerly U.S. Representative to the Military Committee and Standing Group of NATO, assumed duty as Commander-in-Chief, North American Air Defense Command, and Commander-in-Chief, Continental Air Defense Command, on April 1.

Lt. Gen. **James Ferguson**, Dep. Chief of Staff, Research & Development, Hq., USAF, has been assigned additional duty as Senior Air Force Member, Military Staff Committee, United Nations.

Maj. Gen. **Benjamin O. Davis, Jr.**, was reassigned from duty as Dir., Manpower & Organizations, Hq., USAF, to Asst. Dep. Chief of Staff, Programs & Requirements, USAF, effective Feb. 19.

Maj. Gen. **Elvin S. Ligon**, presently Chief of Staff, Allied Air Forces Southern Europe, will become Asst. to the Commander-in-Chief, Pacific Air Forces, on May 1.

Maj. Gen. **W. T. Hudnell**, Commander, San Antonio Air Materiel Area, will retire from active military duty on June 1.

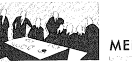
The following new assignments have been made to positions in Hq., USAF: **Col. Bryan M. Shotts**, Dep. Chief, Strategic Div., Directorate of Operations; **Col. Harold E. Collins**, Aircraft Systems Development Officer, Directorate of Development; **Col. William W. Gilbert**, Chief, Defense Supply Systems Development, Strategic/Defense Div., Directorate of Development Plans; **Col. John C. Newman**, Chief, Projects Div., Directorate of Foreign Development; and **Col. Robert L. Ramsey**, Chief, Military Assistance Sales Branch, Office of Assistant for Mutual Security.

The following are new assignments within the Air Force Systems Command: **Col. James L. Dick**, Vice Commander, Air Force Cambridge Research Laboratories; **Col. Kemper W. Baker**, Dir., Advanced Systems Studies & Analysis, Systems Engineering Group (Research & Technology Div.); **Col. Kenneth B. Fess**, Asst. Dir. of Systems Plans, Electronic Systems Div.; **Col. Joseph Green**, AGMX-1 Project Officer, Aeronautical Systems Div.; **Col. James E. Miller**, Dep. Dir. for Engineering, C-141 System Project Office, Aeronautical Systems Div.; **Col. Harry E. Walmer**, System Program Dir., 416L, Electronic Systems Div.; **Col. Robert L. Elwell**, Chief, Development Div., Air Force Weapons Laboratory; **Col. Andrew Boreski, Jr.**, Dep. for Range Engineering, Air Force Eastern Test Range; **Col. William H. Campbell**, Dep. for Materiel, Air Force Eastern Test Range; **Col. C. N. Chamberlain, Jr.**, Asst. Dir., Systems Engineering, Research & Technology Div.; **Col. Thomas Q. Jones, Jr.**, Chief, Production Management Div., Hq., AFSC; and **Col. M. J. Wetzel**, Dep. Commander, Rome Air Development Center.

Top 100 Defense Contractors FY 1964

The 100 companies listed below and their subsidiaries which received the largest dollar volume of military prime contracts of $10,000 or more in fiscal year 1904 accounted for 73.4% of the United States total. This is a decrease of 0.5 percentage points from the 73.9% during fiscal year 1963. The 78.4% of prime contracts awarded to the top 100 corporate groups during fiscal year 1964 was somewhat lower than the average over the last seven years. The first 10 companies had 1.7% more of the total than in fiscal year 1963, while the remaining companies had an overall decrease of 2.2%. It should be noted that about one-half of the military work of the large concerns is subcontracted with approximately 40% of the amount subcontracted going to small business concerns.

1. Lockheed Aircraft Corp.
2. Boeing Co.
3. McDonnell Aircraft Corp.
4. North American Aviation, Inc.
5. General Dynamics Corp.
6. General Electric Co.
7. American Telephone & Telegraph Co.
8. United Aircraft Corp.
9. Martin-Marietta Corp.
10. Newport News Shipbuilding & Dry Dock Co.
11. Grumman Aircraft Engineering Corp.
12. Sperry Rand Corp.
13. General Tire & Rubber Co.
14. International Business Machines Corp.
15. Hughes Aircraft Co.
16. AVCO Corp.
17. Bendix Corp.
18. International Telephone & Telegraph Corp.
19. General Motors Corp.
20. Thiokol Chemical Corp.
21. Raytheon Co.
22. Ling-Temco-Vought, Inc.
23. Westinghouse Electric Corp.
24. Radio Corp. of America
25. General Telephone & Electronics Corp.
26. Textron, Inc.
27. Ford Motor Co.
28. Litton Industries, Inc.
29. Douglas Aircraft Co., Inc.
30. Chrysler Corp.
31. Northrop Corp.
32. Pan American World Airways, Inc.
33. Standard Oil Co. (New Jersey)
34. Kaiser Industries Corp.
35. F M C Corp.
36. Hercules Powder Co.
37. Collins Radio Co.
38. General Precision Equipment Corp.
39. Standard Oil Company (California)
40. Morrison-Knudsen Co., Inc; Utah Construction Co.; Perini Corp., & C. H. Lervell Co.
41. Honeywell, Inc.
42. Texaco, Inc.
43. Massachusetts Institute of Technology
44. Socony Mobile Oil Co.
45. Aerospace Corp.
46. Thompson-Ramo-Wooldridge, Inc.
47. Continental Motors Corp.
48. Magnavox Co.
49. du Pont (E.I.) de Nemours & Co.
50. Goodyear Tire & Rubber Co.
51. Republic Aviation Corp.
52. Olin Mathieson Chemical Corp.
53. Burroughs Corp.
54. Morrison-Knudsen Co., Inc.; Perini Corp.; & Hardeman (Paul), Inc.
55. Western Union Telegraph Co.
56. Lear-Siegler, Inc.
57. International Harvester Co.
58. Johns Hopkins University
59. System Development Corp.
60. Curtiss-Wright Corp.
61. American Machine & Foundry Co.
62. Day & Zimmerman, Inc.
63. Signal Oil and Gas Co.
64. Asiatic Petroleum Corp.
65. Sverdrup & Parcel, Inc.
66. Cutler-Hammer, Inc.
67. Shell Caribbean Petroleum Co.
68. Kaman Aircraft Corp.
69. Atlantic Research Corp.
70. Eastman Kodak Co.
71. Control Data Corp.
72. Continental Oil Co.
73. Hayes International Corp.
74. Hardeman (Paul), Inc.; Concrete Industries (Monier), Ltd.; & Hutcherson Bros, Pty. Ltd.
75. Cities Service Co.
76. Hazeltine Corp.
77. Mitre Corp.
78. Westinghouse Air Brake Co.
79. United States Steel Corp.
80. Texas Instruments, Inc.
81. Vitro Corp. of America
82. Richfield Oil Corp.
83. Standard Oil Co. (Indiana)
84. Union Oil Co. of California
85. Bethlehem Steel Corp.
86. Electronic Communications, Inc.
87. American Bosch Arma Corp.
88. American Ship Building Co.
89. Firestone Tire & Rubber Co.
90. Gyrodyne Co. of America, Inc.
91. Stanford Research Institute
92. Hardeman (Paul), Inc. & Morrison-Knudsen Co., Inc.
93. Fairchild-Hiller Corp.
94. Sinclair Oil Corp.
95. Kiewit (Peter) Sons' Co.
96. Ryan Aeronautical Co.
97. Dynalectron Corp.
98. Sanders Associates, Inc.
99. Universal American Corp.
100. Leavell, C. H., Co. & Kiewit (Peter) Sons' Co.



MEETINGS AND SYMPOSIA

MAY 1965

Underwater Technology Symposium, May 5–7, at Mohican Hotel, New London, Conn. Sponsor: American Society of Mechanical Engineers, 345 E. 47th St., New York, N.Y. 10017. Presentations will include: Deep Ocean Vehicles—their design, fabrication and operation; Deep Ocean Machinery—the propulsion for deep diving submersibles; underwater manipulators and controls; environment and engineering problems of physiology; and underwater communications and navigation.

National Forum on the Control of Water Quality, May 12–13, at headquarters of American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, Pa. 19103. The purpose of the forum is to bring together eminent authorities to discuss the problems of the control of water quality in industry, commerce, power, agriculture; and for municipal, navigational, fishing, recreational, and other purposes. Attendance by pre-registration only. Write to ASTM headquarters for registration information.

JUNE 1965

New aerospace materials that withstand searing temperatures of re-entry will be discussed at the Fourth Materials Symposium, June 9–11, to be held at the Deauville Hotel, Miami Beach, Fla. Sponsored by the AFSC Research & Technology Division's Air Force Materials Laboratory, Wright-Patterson AFB, Ohio, the symposium is expected to attract more than 1500 Government, university and industry materials engineers. Its purpose is to inform industry of Air Force materials requirements and to determine how industry can best provide them. The symposium will be divided into 26 panel discussions chaired by a Materials Laboratory member and one from industry. Panels will include discussions on manufacturing and metal-working techniques, coatings, composites, high-temperature metals and lubricants, corrosion, nondestructive testing, joining and welding. For additional information contact: Col. Lee R. Standifer, Director, Air Force Materials Laboratory, Wright-Patterson AFB, Ohio.

Symposium on Cost-Effectiveness Techniques, June 14–16, Washington, D.C. Sponsor: Washington Operations Research Council (WORC), c/o Booz, Allen Applied Research, Inc., 4815 Rugby Ave., Bethesda, Md. 20014, telephone: (Area Code 301) 656-2200. Presentations will include: Comprehensive discussion of the measures of cost and effectiveness; analytical techniques, with case studies illustrating application of the techniques; problems and limitations of cost-effectiveness; organization for cost-effectiveness; and research that is needed and discussions of new areas where cost-effectiveness might be applied.

Army Unfunded Studies Program Assistance Outlined

Active assistance and support to industries conducting company-funded studies will be provided by the Army Materiel Command (AMC) as part of a new program which promises to enhance cooperation between the Army and industry.

During the past several years defense industry accomplished many worthwhile studies relating to Army research and development equipment, objectives and requirements. These studies have been a great help to Army R&D and it is to encourage an expansion of this effort that the new program is directed.

Any industrial or research firm may submit at any time a proposal for an unfunded study. The point of contact for all company-funded studies of broad scope is the Technical & Industrial Liaison Office, Office of the Director of Research & Development, U.S. Army Materiel Command, Washington, D.C. Those of narrow scope, falling wholly within the purview of a single AMC subordinate command, research laboratory or project manager may be established and supported by those organizations. Any number of proposals may be submitted; however, each proposal must include the following information:

- Study number.
- Title of study.
- Study description.
- Data indicating the firm has a research and development capability in the area of the proposed study.
- Facility clearance.
- Classification of reports produced.
- Schedule—starting date and date report is to be submitted.
- Study coordinators—Department of the Army and industrial firm (including qualifications and clearances of key personnel concerned with the study).
- Support requested for the study. This should indicate documents and information needed, and individuals or agencies to be visited. As the study progresses, additional information may be desired.
- Conditions:

(1) Signature by an authorized representative of a qualified industrial firm indicates that the firm will pursue the study as described, furnish the AMC agency or command copies of the study and all reports pertaining thereto and obtain authorization to publish any information relating to this study from the sponsoring AMC agency.

(2) Signature by an authorized representative of the Department of the Army indicates approval of the study request.

(3) The qualified industrial firm or the sponsoring AMC agency may terminate the study at any time.

The AMC agency concerned will determine authorization for publication in accordance with Army Regulation 360–27.

Upon receipt of a proposed company-funded study, the Director of Research and Development, AMC, or other appropriate AMC organization, will evaluate the proposal considering the benefits to be derived and the support requested. If the appropriate AMC organization agrees to support the study, active assistance will be provided (consistent with current security regulations) in the form of documents and arrangements for conferences or interviews with key personnel. However, availability of Army personnel for conferences and interviews may, of necessity, be limited due to the pressure of activities connected with management of projects supported by appropriated monies, which have first priority.

After a study has been approved for Army support, the company must execute a policy agreement and return a signed copy to the sponsoring AMC organization. A separate policy agreement must be executed for each approved study.

Approval of a proposed study by the Army includes certification of a company "need to know" for the data

(Continued on Page 21)

AMC Regulation Outlines Industry's Use of Army Facilities for Testing

Exercise by the Army Materiel Command (AMC) of its authority to permit the use by private industry of Army facilities for testing iron, steel, and other materials for industrial purpose is described in AMC Regulation No. 70-20, dated November 6, 1964. Delegated by the Secretary of the Army to the Commanding General, AMC, this authority was subsequently redelegated to heads of procuring activities and commanders of installations and activities reporting directly to that headquarters.

The new regulation prescribes the policies, responsibilities, and procedures for planning, conducting and reporting tests and test services for private industry. The provisions of this regulation do not apply to Qualified Products List testing or to military potential testing.

According to this regulation, any individual, private firm, corporation, State government, or other organization which is not a part of the Federal Government (hereafter referred to as "the purchaser") may request tests and test services at an Army installation. In addition, tests and test services for or on behalf of private foreign industry may be performed with the concurrence of the Chief, Mutual Security Office, Headquarters, AMC. Such requests for tests must be made through the foreign government concerned.

Representatives of private industry desiring tests or test services should submit a written request to the Commanding General, AMC or to commander of the appropriate AMC activity or installation. The request must contain information in sufficient detail to allow an estimate of the testing cost and determination of terms and conditions for the test.

The commander concerned will determine whether the testing will be accomplished or test services provided for private industry based upon the following criteria: (1) there must be clear and convincing evidence that the testing requires specialized machines and facilities not found or readily available in private industry, and that competition with private industry is not involved; and (2) the purchaser must agree to execute AMC Form 1271 (Terms and Conditions for Test).

If it is decided that AMC should not conduct the test or provide test services, the purchaser will be advised and reasons for the rejection explained.

If the request is approved, the purchaser will be so advised and also furnished the following information: (1) name of the test agency that will conduct the test or provide the test service; (2) test plan; (3) reporting procedures and requirements; and (4) cost estimates, including an equitable share of direct and indirect overhead costs.

An agreement, in the Terms and Conditions for Test (AMC Form 1271), will be signed by the purchaser and the commander concerned.

Depending upon the nature of the test, the Government may require the purchaser to furnish funding in the amount of the estimated costs to guarantee the purchaser's obligation to hold the Government harmless from claims or loss or damage to property. If costs exceed initially available funds, additional funding must be provided by the purchaser before expenditure by the test facility. Upon completion of the test, any funds in excess of total costs incurred will be returned to the purchaser.

Ordinarily, Government facilities, personnel, or other resources will not be diverted from scheduled tests of Government materiel to perform this service; however, there may be instances in which it would be in the best interest of the Government to revise established test schedules in order to accommodate tests of other than Government materiel. In such instances, priority of the test over those scheduled will be determined by the commander at whose agency the test is to be performed.

Upon conclusion of the test or test services a report of the test will be furnished to the purchaser by the Government in accordance with the reporting procedures and requirements previously established.

Civil Defense Offers Table Display

A new "table-top" display devoted to industrial civil defense is now available for the use of State and local Civil Defense Directors, business firms, and other interested organizations and groups.

Prepared by the Office of Civil Defense, the new full-color display emphasizes the important role of business and industry in the civil defense program and points out how fallout shelters can be provided for employees and the public at industrial and commercial facilities.

The basic theme of the display is summarized on one of the panels, where the standard yellow and black fallout shelter sign is shown and described as "the sign of industrial preparedness and community protection."

The display itself consists of a single strip of heavy art-board, hinged so that when it is set up on a table-top six panels will be visible to the viewer. All panels are about 28 inches high and range in width from five to 17 inches. Industrial civil defense messages, in color, are inscribed on both sides of each panel so that the display may be viewed from either side, or from both sides if a "walk-around" layout is arranged. Set in place, one display occupies a table-top area of about 44 by 12 inches.

Interested organizations may obtain supplies of these displays upon request to the U.S. Army AG Publications Center, Civil Defense Distribution Branch, 2800 Eastern Boulevard, Baltimore, Md., 21220. Packed for mailing, each display measures 18 by 28 inches and comes in a cardboard container for safe transportation and storage.

Dr. Taylor of DASA Wins Memorial Award

Dr. Theodore B. Taylor, Deputy Director, Scientific, of the Defense Atomic Support Agency (DASA), has been named one of the recipients of this year's Ernest Orlando Lawrence Memorial Award for his meritorious contributions to the field of atomic energy. Dr. Taylor, with four other scientists, will be presented the award on April 29 at the National Academy of Sciences in Washington. Each recipient will receive a medal, a citation and $5,000.

Dr. Taylor was cited for "outstanding contributions to the design of nuclear weapons," and also for conceiving the principle of the widely-used TRIGA research reactor.

Dr. Theodore B. Taylor

A leading theoretical physicist, Dr. Taylor was named scientific deputy to Lt. General H. C. Donnelly, USAF, Director, DASA, in 1964. Prior to this appointment, he served at the Los Alamos Scientific Laboratory from 1949 to 1956 and with General Dynamics Corporation's General Atomic Division from 1956 to 1964.

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JUNE 1965

SPEAKERS CALENDAR

OFFICE OF THE SECRETARY OF DEFENSE

Hon. Cyrus R. Vance, Dep. Secretary of Defense, at American Ordnance Assn. Dinner, St. Louis, Mo., April 27.

Maj. Gen. Francis C. Gideon, Dep. Dir., Defense Supply Agency, at DSA-Federal Procurement Days, Berkeley, Calif. April, 28.

Maj. Gen. J. B. Bestic, Dep. Dir. for National Military Command System, Defense Communication Agency, at Telephone Pioneers Assn. Meeting, Washington, D.C., April 29.

Gen. Earle G. Wheeler, Chairman, Joint Chiefs of Staff, Armed Forces Day Address, San Francisco, Calif., May 7.

Hon. Charles J. Hitch, Asst. Secretary of Defense (Comptroller), Armed Forces Day Addresses at Stockton, Calif., May 12; at Torrance, Calif., May 14; at San Fernando, Calif., May 15.

ARMY

Maj. Gen. A. W. Betts, Dep. Chief of Research & Development, at American Institute of Aeronautics & Astronautics Meeting, Purdue University, Lafayette, Ind., April 27; at Sylvania Management Club of Buffalo Meeting, Williamsburg, N.Y., May 13.

Lt. Gen. L. J. Lincoln, Dep. Chief of Staff for Logistics, at Transportation School, Ft. Eustis, Va., April 28.

Lt. Gen. William W. Dick, Jr., Chief of Research & Development, at 1965 National Junior Science & Humanities Symposium, West Point, N.Y., April 29.

Hon. Stephen Ailes, Secretary of the Army, to Graduating Class of the National Inter-departmental Seminar of the Foreign Service Industrial Institute, Washington, D.C., April 30; Armed Forces Day Address, Atlanta, Ga., May 13; Armed Forces Day Address, Chicago, Ill., May 14; at Eleventh Annual National Strategy Seminar, Carlisle Barracks, Pa., June 10.

Gen. Harold K. Johnson, Chief of Staff, Armed Forces Day Address, Hartford, Conn., May 11; at American Defenders of Bataan & Corregidor Banquet, Washington, D.C., May 15 (Appearance only); at Army Relief Society, New York, N.Y., May 18.

Lt. Gen. W. H. S. Wright, Chief, Office of Reserve Components, Armed Forces Day addresses at Hanover, N.H., May 12; at Miami, Fla., May 14 and 15.

Gen. C. W. Abrams, Jr., Vice Chief of Staff, Armed Forces Day address at Columbus, Ohio, May 14.

Maj. Gen. Frederick J. Clarke, Dir. of Military Construction, Office, Chief of Engineers, at Annual Joint Meeting of The Society of American Military Engineers, The Georgia Engineer Society, and The Society of Professional Engineers, Ft. Benning, Ga., May 14.

Lt. Gen. Walter K. Wilson, Jr., Chief of Engineers, at American Society of Civil Engineers Transportation Engineering Conference, Minneapolis, Minn., May 17; at 45th Annual Meeting of Society of American Military Engineers, Ft. Belvoir, Va., May 24.

NAVY

Hon. Paul H. Nitze, Secretary of the Navy, at American Society of Naval Engineers Meeting, Washington, D.C., April 30; Armed Forces Day Address at Houston, Tex., May 13; at Naval Academy Alumni Assn. Meeting, Washington, D.C., May 19.

Brig. Gen. J. O. Butcher, Commanding General, USMC Supply Activity, Philadelphia, Pa., Armed Forces Day addresses at Camden, N.J., May 11; at Reading, Pa., May 15.

RAdm. C. K. Duncan, Commander of Cruiser & Destroyer Force, Atlantic, at Commissioning of JOSEPHUS DANIELS (DLG27), Boston, Mass., May 8.

Adm. David L. McDonald, Chief of Naval Operations, Armed Forces Day address at Tulsa, Okla., May 14; at SHAPEX Conference, Paris, France, June 14.

Gen. Wallace M. Greene, Jr., Commandant, U.S. Marine Corps, Armed Forces Day address at Seattle, Wash., May 14.

Hon. R. W. Morse, Asst. Secretary of the Navy (Research & Development), at Second Symposium on Military Oceanography, Washington, D.C., May 5; at Acoustical Society Meeting, Washington, D.C., June 3.

Hon. K. E. BeLieu, Under Secretary of the Navy, at launching of GUARDFISH (SS(N)612), at Camden, N.J., May 15.

AIR FORCE

Gen. W. H. Blanchard, Vice Chief of Staff, at Air Force Assn. Meeting, Santa Monica, Calif., May 1.

Gen. J. P. McConnell, Chief of Staff, at Press Club, Washington, D.C., May 5; Armed Forces Day address at Pittsburgh, Pa., May 14.

Gen. B. A. Schriever, Commander, Air Force Systems Command, at Aerospace Electronics Conference, Dayton, Ohio, May 11; at Aviation/Space Writers Assn. Meeting, Albuquerque, N.M., May 20.

Maj. Gen. S. J. McKee, Dir. of Plans, at Central Florida Executive Club Meeting, Orlando, Fla., May 11.

Hon. Brockway McMillan, Under Secretary of the Air Force, Armed Forces Day address at Cleveland, Ohio, May 11.

Maj. Gen. D. R. Ostrander, Commander, Office of Aerospace Research, at MIT Luncheon Club Meeting, Washington, D.C., May 12; at Advanced Propulsion Symposium, Palo Alto, Calif., May 26–28.

Hon. E. M. Zuckert, Secretary of the Air Force, Armed Forces Day address at Detroit, Mich., May 12.

Gen. J. D. Ryan, Commander-in-Chief, Strategic Air Command, Armed Forces Day address at Oklahoma City, Okla., May 14.

Lt. Gen. H. B. Thatcher, Commander, Air Defense Command, Armed Forces Day address, Dallas, Tex., May 14.

Maj. Gen. B. I. Funk, Commander, Space Systems Div., AFSC, at Aero Propulsion Laboratory, Minneapolis, Minn., May 25.

Part of Offshore Petroleum Procurement Returned to U.S.

To implement international balance of payments objectives, the DOD will return about nine per cent of its total annual offshore petroleum procurement of 124 million barrels to the United States. These petroleum products, now costing approximately $27 million annually, will be purchased from domestic suppliers. This move will not affect procurement of petroleum from Venezuela.

The program will be carried out by the Defense Fuel Supply Center, Washington, D.C., a field activity of the Defense Supply Agency, buyer of petroleum products for the Armed Forces. The Center will develop plans for determining the specific items to be returned to the United States for procurement.

DOD Report on Small Business Procurement July 1964–January 1965

Small business firms received $2,809 million in prime contract awards during the first seven months of fiscal year 1964 (July 1964—January 1965), which was $331 more than the amount received in the same seven months of the previous fiscal year.

Defense procurement from all U.S. business firms totalled $13,629 million during July 1964—January 1965, which was $1,085 million less than the total for July 1963—January 1964. There were reductions of $1,093 million in missile and space systems, $295 million for other major hard goods, and $128 million for services. These reductions were partially offset by increases of $293 million for procurement of commercial type items, small purchases and construction, and $138 million for civil functions (rivers and harbors work).

As shown in Table I, those categories of procurement which had a reduction in the volume of procurement have a low small business percentage, while those categories having increases in the volume of procurement have a relatively large small business percentage. The net effect of these changes is a substantial increase in the small business percentage to 20.6% during July 1964—January 1965, compared to 16.8% for the same seven months of fiscal year 1964, and 18.0% for the entire fiscal year 1964.

Small business firms participate in the production of missiles and other major hard goods through subcontracts from large business firms to a greater degree than through prime contracts. As noted above, there has been a marked decrease in such procurement from large business firms. The dollar volume of subcontract commitments to small business firms by large business firms has also declined, totalling $2,003 million for July 1964—January 1965, compared to $2,056 million for the same months of the previous fiscal year.

Prime contract awards for experimental, developmental, test and research (EDTR) work are included in Table I, and shown separately in Table II. Small business firms received $73 million in prime contract awards for EDTR work during July 1964—January 1965, compared to $75 million for the same months of the previous fiscal year. Small business firms received 2.9% of EDTR prime contract awards during July 1964—January 1965, compared to 2.3% for the same months of fiscal year 1964, and 3.7% for the entire fiscal year 1964.

TABLE I

SMALL BUSINESS SHARE OF DEFENSE PROCUREMENT

(Amounts in Thousands)

Type of Firm and Category of Procurement	Fiscal Year to Date 1965 Jul 64–Jan 65	Fiscal Year to Date 1964 Jul 63–Jan 64	Fiscal Year 1964 Jul 63–Jun 64
DEFENSE PROCUREMENT (PRIME CONTRACTS) FROM ALL BUSINESS FIRMS	$13,628,886	$14,714,427	$26,020,411
Missile & Space Systems	2,483,544	3,576,862	5,570,354
Other Major Hard Goods	5,777,456	6,073,381	12,087,218
Services	844,603	972,424	1,800,017
Commercial Items, Construction & All Purchases Under $10,000	3,888,456	3,595,863	6,754,479
Civil Functions	634,827	496,307	690,348
DEFENSE PROCUREMENT (PRIME CONTRACTS & SUBCONTRACTS) FROM SMALL BUSINESS FIRMS—TOTAL	4,812,330	4,534,580	8,471,472
PRIME CONTRACTS (SUB-TOTAL)	2,808,865	2,478,430	4,841,951
Missile & Space Systems	33,202	48,708	89,219
Other Major Hard Goods	510,787	382,224	885,064
Services	172,404	265,547	412,106
Commercial Items, Construction & All Purchases Under $10,000	1,841,240	1,566,169	3,132,622
Civil Functions	251,223	215,787	322,860
SUBCONTRACTS	2,003,465	2,056,150	3,629,521
PERCENTAGE OF DEFENSE PROCUREMENT TO SMALL BUSINESS FIRMS—TOTAL	35.3%	30.8%	31.6%
PRIME CONTRACTS (SUB-TOTAL)	20.6%	16.8%	18.0%
Missile & Space Systems	1.3	1.4	1.6
Other Major Hard Goods	8.8	6.3	7.3
Services	20.4	27.3	22.9
Commercial Items, Construction & All Purchases Under $10,000	47.4	43.6	46.4
Civil Functions	39.6	43.5	46.2
SUBCONTRACTS	14.7	14.0	13.6

TABLE II

SMALL BUSINESS SHARE OF MILITARY PROCUREMENT
OF EXPERIMENTAL,
DEVELOPMENTAL, TEST AND RESEARCH WORK

(Amounts in Thousands)

Type of Firm and Department	Fiscal Year to Date 1965 Jul 64–Jan 65	Fiscal Year to Date 1964 Jul 63–Jan 64	Fiscal Year 1964 Jul 63–Jun 64
TOTAL	$2,499,033	$3,237,344	$5,144,825
Army	572,283	522,563	867,003
Navy	447,132	467,193	893,248
Air Force	1,479,618	2,247,588	3,369,270
Defense Agencies[1]	---	---	16,304
SMALL FIRMS	73,218	74,951	189,704
Army	21,906	17,492	48,182
Navy	25,653	29,279	69,831
Air Force	25,659	28,180	66,078
Defense Agencies[1]	---	---	6,613
OTHER FIRMS	2,425,815	3,162,393	4,955,121
Army	550,377	505,071	818,821
Navy	421,479	437,914	823,417
Air Force	1,453,959	2,219,408	3,303,192
Defense Agencies[1]	---	---	9,691
SMALL FIRMS AS A % OF TOTAL	2.9%	2.3%	3.7%
Army	3.8	3.3	5.6
Navy	5.7	6.3	7.8
Air Force	1.7	1.3	2.0
Defense Agencies[1]	--	--	36.7

[1] Data for Defense Agencies are available only for the full fiscal year.

FROM THE SPEAKERS ROSTRUM

The following are excerpts from address by James W. Roach, Asst. Dir. (Engineering Management), Office of Defense Research & Engineering, at DOD Advanced Planning Briefings for Industry.

Management Trends in Defense Development and Production

* * * * * * * *

I would also like to make it very clear from the outset that the policy and procedural changes I will describe are designed not to provide rigidity or to inhibit judgment but rather to establish a framework within which the widest discretion may be exercised in dealing with each individual transaction. Primarily we are seeking to assure that such discretion is exercised with an excellent understanding of the facts of the individual case and of the Department's overall objectives. Secondarily, we are also seeking to find ways to give wider latitude to the management judgments of our contractors with the assurance that their motivations are always consistent with our objectives. By this means we expect to reduce Government intervention in corporate management.

Specific Changes in Management Policies.

1. Categorization of Research and Development. In order to insure the development and proper management of an adequate technological base for new weapons it was concluded that there was need for a departure from the traditional concept of "research and development" as a single subject. This total field was divided into six categories which, in turn, highlighted the fairly obvious fact that the different categories of work, which had previously been lumped as "R&D," needed quite different management techniques. A description of these categories follows:

a. The *Research* category encompasses effort directed toward increased knowledge of natural phenomena and enviroment; also, effort directed to defining the causes of problems in the engineering sciences and their possible solutions. This work is most frequently done either in Government laboratories or under cost-reimbursement contracts or grants with universities.

b. *Exploratory Development* includes effort directed to specific military problems short of the development of usable hardware. It includes studies to establish the feasibility of new techniques, processes, materials, components, devices, subsystems, and systems which may have military application. It will normally be performed on a cost-plus-fixed-fee or incentive basis.

c. *Advanced Development* adds another dimension to the development. We add the operational and technical suitability demonstration. It is characterized by the development of specific hardware or components for test and evaluation rather than for service use. It would normally be covered by incentive contracts.

d. *Engineering Development* has, as a primary objective, design engineering for service test; for instance, a new avionics system for an aircraft in operational use. Too often, in the past, we have tied each advance in materials or components to a specific weapon system when such an item should be developed for use by many systems. Contracts for engineering development work should be on a fixed price or an incentive basis.

e. *Operational Systems Development* is that effort directed toward development, engineering and test of systems, support programs, vehicles and weapons that have been conditionally approved for production and deployment. Contracts for systems development should be on a fixed price or an incentive basis. This work may not be done under cost-plus-fixed-fee contracts. . . .

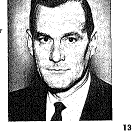
Now, what does this resume of our R&D categories mean to industry? Obviously, a great deal, if you are in the R&D field. It should furnish you clues as to the amount of technical risk and advancement you should undertake by contract as well as the types of R&D effort you should seek, depending on the status of the concept you want to pursue.

2. Statements of Military Requirements. In the very early phases of the evolution of new weapons it is usually desirable to state the requirement in terms of the mission to be accomplished or job to be done, e.g., transport troops, destroy certain types of targets, or the like. . . . By stating our needs in this manner, we hope to encourage innovation and the exploration of untried technical approaches. However, as we progress to the end of the spectrum represented by Engineering or Operational Systems Development we will progressively have selected our approach, determined its feasibility and become prepared to describe the performance we want in specific terms such as X miles or range, Y margin of accuracy, Z tons of payload, as well as acceptable ranges of cost and time of deployment. Thus our management methods assist us in making it clearer to you, at each successive stage, exactly what our requirements are.

3. Project Definition. In order to minimize large outlays of funds against concepts which may not be feasible, we are now following the practice of inaugurating large systems development projects only after completion of what we call a "Project Definition Phase." This phase, which is intended as a screen through which all major systems developments shall pass, is the process by which we, together with our contractors, do our thinking and planning on new major weapons. PDP comes after a conditional decision has been made to acquire the weapon or systems.

Very briefly, the project definition phase, which is funded by the Government, begins with the solicitation of proposals from qualified industrial firms. Its purpose is simply to define the program and establish the feasibility of its performance, time and cost prior to authorizing full-scale development. At the beginning of PDP we do not normally attempt to establish rigorous specifications, preferring to encourage initiative and innovation on the part of competing contractors and contractor teams. We will frequently support and fund more than one approach throughout the whole project definition period.

The competing contractors can explore in depth the



James W. Roach

Assistant Director
(Engineering
Management)

Office of Defense
Research &
Engineering

many unknowns which are present in any new effort. They can determine in outline the overall design and define the subsystems and major components. Most important, they can identify the critical problems and make good estimates of how long and how much money it will take to solve them.

With this information at hand, the Government is in a much better position to decide whether to proceed with full-scale development or concentrate on advancing requisite technology. If the answer is to proceed, we will be able to negotiate the development contract (and occasionally the subsequent production contract), in a competitive climate, with one of the teams which has already been established with a visible history of successful collaboration during the project definition phase. . . .

4. **Pert/Cost.** . . . This management system, used during project definition, permits an initial detailed analysis and evaluation of forecasts of the cost and time required to complete each step in a major development and, thereafter, provides a basis for very early identification of potential schedule slippages or cost overruns so that corrective actions can be taken promptly. It is an intricate system and, hence, extensive training programs in its use have been developed for both Government and industry personnel.

5. **Project Management.** On most of our major weapons systems we have assigned to one person the personnel, the funds and the authority to manage the system throughout its development and production phases. It is felt that the use of such project managers provides faster decisions to industry and more reasoned trade-offs when opposing considerations of time, performance or money must be faced. A policy on the use of project management in our major systems is expected to be approved within the next few weeks.

6. **Changes in Contract Types.** In 1962 the Armed Services Procurement Regulation was modified to emphasize the selection of contract types which provide maximum profit incentive for superior performance. These contract types stated in order of preference are firm fixed price, fixed price incentive, cost-plus-incentive-fee and, last, cost-plus-fixed-fee. . . .

a. *CPFF Contracts.* The use of CPFF contracts within the DOD reached a high point in the first nine months of FY 1961 when our studies revealed that 38% of our procurement dollars ($8.4 billion annually) were in this form of contract.

Since that time our use of CPFF contracts has been drastically reduced to the point where they now represent only a little over 10% of our procurement dollars. . . .

b. *Fixed Price Contracts.* ASPR has always stated a clear preference for firm fixed price contracts. It is evident from our studies of pricing trends that, in the past, we and our contractors have been somewhat timid about going to such contracts. There is also evidence that this reluctance is being overcome. As a percentage of our total procurement, firm fixed price contracts rose from 31.5% in FY 1961 to 38.0% in FY 1962 to 41.5% in FY 1963 and to 46.3% in FY 1964. This trend is being encouraged. . . .

c. *Incentive Contracts—General.* Following the firm fixed price contract, the next preference stated in ASPR is for fixed-price incentive and cost-plus-incentive fee contracts in that order. . . . The major advantage of incentive contracts is that profit is dependent upon how well the contractor performs. . . .

Incentive contracts in a sense are contrived substitutes for the normal disciplines imposed in the market place. The concept of incentive contracting is not new. Only the current emphasis as a means of getting away from CPFF contracting is new. . . .

7. **Increased Competition.** At this point I would like to discuss briefly our efforts to increase *price competition.* It is one of our major procurement objectives to make more logical and timely decisions with respect to price competition. This subject is under constant scrutiny. We have found that only through very careful advanced planning can we assure, on the one hand, that we have all the data, test results and procurement lead time to permit competitive buying where this is logical and, on the other hand, that we can make early identification of those cases where, for technical, economic or other reasons, it would be ill-advised to seek competition. We find the better our advanced planning, the sharper and more assured our decisions become. This, in turn, usually results in more and better competitive procurement with greater demonstrable savings. . . .

The increased level of price competition which we have achieved has been made possible by such actions as the following:

a. Setting quotas for the improvement to be achieved by each major buying office and reporting the progress made monthly by both commodity program and by purchasing organization.

b. Requiring procurement planning several years in advance for every major non-competitive item, determining the method of procurement which will be followed throughout the life of each such items and the date when data and drawings will be available for full competitive procurement.

c. The establishment of a detailed decision-making process to identify items which can, and those which cannot, be safely and economically procured on a competitive basis.

d. Searching out potential areas for the greater use of Two-Step Formal Advertising and Multi-Year buying procedures, where our savings have been quite spectacular. . . .

8. **Contractor Performance Evaluation.** This program, which was established in August 1963, is designed to provide an orderly and uniform method of determining the effectiveness of major defense contractors in meeting their contractual commitments under contracts for engineering development and operational systems development. . . . This program is designed to replace the individual and varying subjective judgments as to past performance that have been relied on in the past, both in new source selection and in profit negotiations. The success of this evaluation program depends on having sound and measurable contractual commitments. Hence, the performance evaluation program both depends on and supports the other management improvements I have been describing.

An application of this CPE principle to production contracts has been designed and is now undergoing field tests.

9. **Profit Guidelines.** About two years ago we published a set of weighted guidelines for profit to be used by our contracting officers when they negotiate contracts based on analyses of estimated costs of performance. It was our intention, through the use of these guidelines, to draw very substantial distinctions in profit allowances between contractors who do and those who do not undertake significant contract cost risks, between those who do and those who do not provide their own facilities and working capital, and between those who have a good and those who have a poor record of past performance.

Other Management Improvements.

Up to this point I have endeavored to highlight some of the major improvements within the DOD which have been directed towards the process of weapons development and acquisition. I would like to mention briefly, however, a few other actions we have taken to improve our management.

1. **Value Engineering.** A substantial effort is being directed toward improving our value engineering programs under which the Government provides substantial incentives to its contractors to encourage them to engineer ways to reduce the costs of our hardware without any degradation of its function. A new section on this subject was added to ASPR in November 1963. It has been modified once and further changes to make the incentives more effective are likely in the near future.

2. Technical Data. We have recently revised our policies with respect to the rights which we will acquire in technical or design data originated by our contractors. This revision was designed to give more protection to the private innovator while assuring to the Government requisite rights in data developed at its expense.

3. Training and Career Progression. As a result of the increasing management complexity introduced by the techniques I have been describing, we have found it necessary to increase and improve our training program. In the four years ending in June 1965, more than 23,000 procurement and technical personnel will have completed courses in our tri-service schools.

4. Organizational Realignments. Secretary McNamara has directed realignment or unification of several establishments in the interest of improving the management of our procurement processes. These include the creation of the Defense Supply Agency, the Defense Contract Administration Services Activity and, more recently, the Defense Contract Audit Agency.

5. Procurement Management Review. We have long been concerned with the manner in which some of our new policies and procedures are being administered in actual operation. Accordingly, we have developed an organization with the capability of examining in depth the actual results of these new management shifts at our major procurement installations. These periodic reviews are normally comprehensive in nature. . . .

Effect on Subcontractors.

At first glance it may appear that these management changes apply only to the large systems contractor. This is not the case. By design, the changes I have broadly outlined include provision for protecting or expanding the role of the subcontractor in military procurement. They also provide for the protection of the rights of the private innovator at any level of contractor.

Our improved procurement planning, including Program Definition, sharply reduces the possibility of termination of major programs in midstream which frequently causes major subcontractor hardship. This planning will also permit more orderly breakout to competition of components and subsystems within the capability of the smaller contractor.

Use of contract types which place increasing price risk on the contractor should lead to more sound make or buy decisions based on quality and economy rather than prime plant loading and volume considerations. The Profit Guidelines specifically provide for reward or penalty to the prime contractor based on the quality of his small business subcontracting program. Current contract provisions for Value Engineering authorize the flow-down of incentive payments to subcontractors.

In short, the first impact of DOD procurement management changes is on the major systems contractor but, because of the requirement for quality performance at reduced cost in a competitive atmosphere, benefits will flow to all echelons of defense industry.

Future Changes.

From all of the foregoing it may be observed that the rate of change in defense policies on weapons development and acquisitions accelerated tremendously in the last four years. Change is inevitable in our business and further change is to be anticipated. In this context there are several efforts soon coming to fruition which can be expected to be of interest to both DOD personnel and the defense industry.

One of these is a procedure which will allow us to measure the extent to which the current workload of a contractor has moved away from CPFF or other low risk contracts to fixed price or higher risk contracts so that a higher percentage of every dollar he spends in overhead comes out of his own pocket. As this percentage gets higher, he has a greater stake in assuring prudent management. Clearly there should be some cross-over point where we can discontinue some of the government controls which were imposed during the period of heavy CPFF contracting, and perhaps also relax the scope and depth of our auditing. We are currently developing standards and procedures for measuring such increases in the contractor's share in his overhead expenditures. Our efforts are being fully coordinated with interested industry groups.

We also have under consideration a proposed new directive on selection of sources for major new developments. The objectives are to increase the latitude of the selection authority, to enroll the efforts of the appropriate management level in the selection activity, and to improve source evaluation techniques so that greater objectivity can be brought to bear. While the pending DOD Draft Directive applies only to major systems, the principles cited are equally applicable to all evaluation and selection actions. Coordination is continuing with industry.

Conclusion.

I hope I have made it clear that the management improvements that we have noted here today, while very significant and mutually interrelated and reinforcing, will not prove to be the final word. In the next four years we will continue to study many new areas to initiate improvements where necessary while at the same time we will strive to consolidate the progress already achieved. In these efforts we will continue to stress greater opportunities for risk and reward to our defense contractors and, we hope, a progressive lessening of Government controls on company managements. We solicit the cooperation and assistance of industry in achieving these ends.

Maj. Gen. Lane Commander of Newly Activated MTMTS

The Military Traffic Management and Terminal Service (MTMTS) was formally activated on February 15 as a major field command of the Department of the Army. In a special ceremony at the Pentagon Honorable Stephen Ailes, Secretary of the Army, presented Major General John J. Lane, USA, general orders activating MTMTS. General Lane also received special orders naming him Commander of MTMTS and Executive Director for Military Traffic, Land Transportation, and Common-User Ocean Terminals.

MTMTS is an amalgamation of the Defense Traffic Management Service (DTMS), the Army Terminal Commands, the Army and Navy common-user ocean terminals, the Air Traffic Coordinating Officers of the Army, Navy, and Air Force, and other key traffic management functions previously performed by the Military Services. Its operational mission is to manage the utilization of commercial transportation for military cargo and personnel in the continental United States and to operate and manage all military ocean terminals except those used by the Navy in support of the fleet. In addition to a National Headquarters in Washington, D. C., MTMTS has three Area Commands.

As the MTMTS Commander, General Lane is designated Executive Director of traffic management functions for Secretary of the Army, who is the Single Manager for Military Traffic, Land Transportation, and Common-User Ocean Terminals. With more than 30 years of distinguished military service, General Lane has outstanding qualifications for his assignment. Among the positions of high responsibility he has held in military transportation and traffic management are the following: Commander, U. S. Army Transportation Center, Ft. Eustis, Va.; Director of Logistics Manpower & Doctrine for the Office of the Deputy Chief of Staff for Logistics; and Assistant Chief of Transportation (Military Operations), Department of the Army.

The MTMTS organization is jointly staffed to perform its mission to execute all assigned traffic management functions and common-user terminal service activities for the DOD.

Disposal of Excesses in National Stockpile Approved by OEP

As a result of a recent requirement computation, maximum stockpile objectives for many strategic and critical materials contained in the National Stockpile have been substantially reduced by the Office of Emergency Planning (OEP). This has resulted in many materials becoming excess. Approval for the disposal of a number of these materials has been granted. Others are expected to follow.

A list of the materials contained in the National Stockpile, indicating those in which excess has been approved for disposal, is given below. Any defense contractors having a problem in obtaining delivery of appreciable quantities of the materials listed should contact their contracting officers for possible relief or assistance in utilizing these excesses.

DOD has cooperated to the fullest extent in the utilization of stockpile excesses. Some of these uses: feathers and down in sleeping bags and medical pillows; quebracho in tanning leather for military footwear; mercury in dentistry; and cadmium in plating. These actions by DOD have resulted in cost savings of millions of dollars.

There is nothing basically new about stockpiling—history is replete with examples of storing materials during times of plenty and tranquility for use in times of scarcity or turmoil. During World War II, this nation found itself in short supply of many materials and dependent upon foreign nations for many of its needs. In many cases delivery was cut off by the enemy, causing serious difficulty. To minimize anticipated problems the National Stockpile was established by the Strategic and Critical Materials Stockpiling Act of 1946. Its purpose is to insure the availability for a reserve of such materials. Currently there are approximately 100 different kinds and grades of materials contained in the stockpile. The acquisition cost of these materials is approximately $8.5 billion.

OEP is charged with the responsibility of selecting and determining whether a material is considered critical or strategic. To do this, the Military Departments, Defense Supply Agency and other interested agencies are called upon to furnish their estimated requirements for the selected materials covering full mobilization based on the latest war plans. Using the total estimated mobilization requirements versus availability in the Continental United States and from friendly foreign nations during an emergency, OEP establishes stockpile objectives. After the establishment of kinds and quantity of materials to be stockpiled by OEP, the General Services Administration (GSA) is charged with the full responsibility of procuring, storing, rotating, disposing and record keeping.

Periodically, as logistic guidance is changed and the U. S. economy grows, recomputations of requirements are called for which often alter the objectives. In the event the objectives are decreased below the levels on hand in the stockpile, OEP declares the differences as excess. A study is then made by the OEP to determine whether these excesses can be disposed of without injury to the national economy. If the study reveals that the materials can be disposed of with little effect on industry and the economy, GSA prepares a disposal plan, (quantity to be disposed, rate and procedures for disposal), coordinates
nterested Federal agencies and industry and
EP for approval. After OEP approval, GSA
osal legislation to Congress for its approval.
ires a six months waiting period, after pub-
al action in the Federal Register, before
be taken to effect the physical disposal;
es of urgency, Congress may waive this

*Aluminum
*Antimony
*Asbestos
Bauxite
Beryl
Beryllium Metal
Bismuth
*Cadmium
Castor Oil
Celestite
Chromite
Cobalt
Coconut Oil
Colemanite
Columbium
*Copper
*Cordage Fibers
Corundum
Cryolite
*Diamond Dies
Diamond, Industrial Crushing Bort
Diamond, Industrial Stones
Diamond Tools
*Feathers and Down
Fluorspar
Graphite
Hyoscine
Iodine
*Mercury
*Mica
*Molybdenum
*Nickel
Opium
Palladium
Palm Oil
Platinum
Pyrethrum
Quartz Crystals
Quinidine
Quinine
Rare Earth
Rhodium
*Rubber
Ruthenium
Rutile
Sapphire & Ruby
Selenium
Shellac
Silicon Carbide, Crude
Silk Noils and Waste
Silk Raw
Sperm Oil
Talc, Steatite
*Tantalum
Thorium
Tin
Titanium Sponge
Tungsten

* Excesses have been approved for disposal.

U.S./Italian Agreement on M-60 Tank Production

The Department of Defense and the Italian Ministry of Defense have concluded an agreement for a joint production of M-60 medium tanks in Italy. Under this agreement, the first tanks (approximately 20 per cent of the envisioned total) will be furnished by the U. S. directly from production, thereby accelerating delivery of the new vehicles to the Italian Army. The remaining tanks will all be built by cooperative production at Italian plants under technical arrangements being developed by the U. S. prime manufacturer, the Chrysler Corp., and Italian manufacturers.

Collaboration between the U. S. and Italy in the field of military production has been in existence for several years.

Specifically, M-113 armored personnel carriers are now being produced in Italy in Italian-U. S. cooperative production. Close cooperation also exists between the two countries in the field of research and development with exchange of technical data on specific projects and production of scientific material of common interest.

The recent agreement regarding the M-60 tanks is particularly welcomed by the U. S., not only because it means considerable contribution to the modernization of equipment already under way in the Italian Armed Forces committed to NATO, but also because it creates a considerable amount of work for U. S. industry. Of more immediate importance, with the sale of tanks and components produced by the U. S., this co-production project will make a significant contribution toward improving the U. S. balance of payments situation.

fense Contract Admin. Unified

ontinued from Page 2)

ablishment of a Contract Administration Advisory ard in the Office of the Secretary of Defense and establishment of a national planning group for contract administration services under the DSA.

At the same time the Philadelphia pilot test was brought a close, and a pattern for operation nation-wide was wn out of the information gathered in the pilot test program. Finally, a merger plan was worked out to extend the unified concept of contract administration services ion-wide in 11 regions without disrupting the very ential work on defense contracts.

t is expected that the new national organization will be ablished early in 1966 and be in a position to present ustry with uniform procedures in contract administration services. This will reduce the number of DOD organizations dealing with defense industry on common functions h as inspection and acceptance of material, quality trol, accounting for government property, security arance of contractors' facilities and personnel to handle ssified information and payments of contractors. CAS l be jointly staffed with military and civilian representatives from all military services and DSA.

he improved service so far worked out at Philadelphia icates that the new organization can achieve savings personnel with better service to the contractor. Since various specialists will be essentially the same people, quality will be at least as good as before and, because new unified procedures and policies, should improve.

xperience indicates that full cooperation of the conctors is essential to make this new organization work. e Philadelphia experience points out that the new regulations will not in themselves provide a better service ess contractors give their complete support.

good example of the need for a special effort on the t of contractors is the following experience in Philadelphia. There were problems with payments to contractors. A backlog of overdue payments developed for a number of reasons mostly arising from misunderstandings about the forms used in the pay procedures. To alleviate this condition, procurement contracting officers were requested to utilize the fast payment clause in purchase orders. This helped, but it did not solve the problem because it required a contractor's certification which was not accomplished in a great many cases. Contractors must scrutinize every new procedure and comply with every new instruction if the new system is to get off to a good start. This should be easy, for the main effort of this consolidation is to simplify and to provide straight and swift channels of communication.

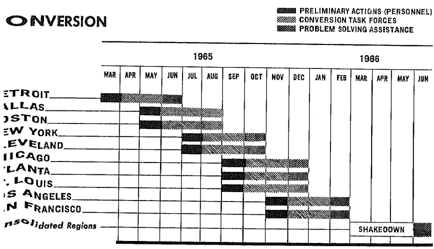
From a management viewpoint, the uniformity, standardization and orderliness which can be achieved in field contract administration organizations can provide, for the first time, the capability for a qualitative evaluation of the job that is being done in the field management of contracts.

For industry, the changes mean a single agency of the Government to deal with the contractor instead of multiple Government offices making individual demands, often for the same information.

Project 60 has a real stake in the DOD cost reduction program. Substantial cost benefits to both Government and industry are expected from the cumulative actions that have been taken to improve policy direction and control at the Secretary of Defense level, provide uniform policies and procedures and reduce multiple DOD representation in contractor facilities. Of even more significance is the savings industry can expect in both direct and indirect costs from these actions.

The chart below shows the proposed consolidated region headquarters and the time periods for their planned conversion. The Philadelphia region, consolidated under the Defense Supply Agency last September, is not included in this chart.

ONVERSION



AF Engineering Data

(Continued from Page 2)

now expect compliance from the aerospace industry. No longer will the practice of submitting "swiss cheese" drawings be permitted. The required level of design disclosure will be enforced. Data submitted with limited rights to the Government will be used within the fair framework of prenegotiated rights. With considerably fewer drawings delivered, the inspectors and development engineers can do a more thorough job of insuring technical adequacy.

New techniques in the 375 series of regulations, i.e., configuration management, program definition, are compatible with and implemented by 310-1 procedures. Indeed, 310-1 acts as a discipline over multiple, conflicting and overlapping data requirements imposed by the parent documents.

Strangely, data has not drawn much attention from top industry management. This is probably due to two factors: first, data is largely produced as a side product of the main task of designing, developing and building equipment; second, costs of furnishing data tend to be classed in overhead without extensive cost analysis. As the Government continues to emphasize data as an expensive product which must be carefully managed by data specialists, this attitude should change. A top level Data Management Conference is scheduled for May 26-27, 1965. The purpose of this meeting, which will be sponsored by DOD and hosted by the National Security Industrial Association, is to motivate corporate executives to recognize the need for better formal communication between the Government and industry so that our mutual goals can be more readily attained.

The Air Force has drastically reduced the requirements for data on contracts. Where possible, data requirements are tailored to the contractor systems. Since the government now requires considerably less data, it is anticipated that the prime contractor will likewise impose stringent controls to insure that the flow of paper from his vendors is the minimum essential. The prime contractors can no longer justify undue detail when the DD Form 1423 clearly implies that the Air Force doesn't need it. When this system is fully implemented, contractor supplied data should be reduced by several quantum levels. One contractor reported that he is delivering one-tenth of his previous required paper work.

It should be readily apparent that, as the quantity of data is reduced, the quality will increase. All users of data must justify how they use it, the impact if they don't get it, and what decisions are made as a result of getting it. Consequently, visibility is increased and the vital flow of management information is no longer choked by minutiae. System Program Directors will recognize that surveillance over the contractor is easier and more effective because it is based on need. Data now becomes the feedback loop for control—the nerve system of successful program management.

Cooperation in Equal Employment Program Cited

The following businesses and organizations have been cited by the Director, Equal Employment Opportunity Program of the DOD for cooperation under Title 7 of the Civil Rights Act of 1964, which seeks to overcome discriminatory employment practices:

American Airlines; Aluminum Company of America, Badin, N. C.; General Electric Lamp Plant, Newark, N. J.; Texas A & M College; Ingalls Shipbuilding Corp., Pascagoula, Miss.; Todd Shipyards Corp., New Orleans, La.; Hotpoint Division of General Electric Co., Chicago, Ill.; Frito-Lay Co., Brentwood, Md.; Sunshine Biscuit Co. facility, Dayton, Ohio; American Chicle Co., Long Island City, N. Y.; Hunt Food & Industries, Atlanta, Ga.; Mauney Hosiery Co., Kings Mountain, N. C.; Erwin Mills, Erwin, N. C.; Union Bag-Camp Paper Corp., Savannah, Ga.; Texaco, Port Arthur, Tex.; Gulf Oil Corp., Port Arthur, Tex.; American Tobacco Co., Durham and Reidsville, N. C.; Brown & Williamson Tobacco Co., Winston Salem, N. C.; Liggett & Myers Tobacco Co., Durham, N. C.

Tools for the Man in the Sea

(Continued from Page 3)

to the powerful corrosive force of sea water. There is a question whether power tools can be sealed to withstand the great pressure of the deep ocean so that they are leakproof.

Pneumatic tools have been used with some success at depths of 50 to 60 feet but at greater depths the additional air pressure required is likely to rule them out. At depths where the water pressure is up to 100 pounds per square inch they would be virtually useless. (This is the pressure at which SEALAB II will be conducted.)

Hydraulic power tools probably offer the greatest promise since leaks would not affect their operation. However, they must be simple and easy to handle, such as incorporating the use of a universal head to which instruments for cutting, turning or hammering can be attached. At the present time, no such tool is yet in sight.

Actually, the experience of SEALAB II should throw more light on the problem of designing undersea tools. It is hoped, for example, that included in the crew will be divers who are also electrical and mechanical engineers and who can observe firsthand the conditions liable to be encountered by undersea "mechanics." During SEALAB II a variety of tasks will be performed with tools now available in order to clarify these problems. Even so, what we learn at a depth of 250 feet may not necessarily apply at all at depths of 500 feet or beyond.

Aquanaut and a surface support diver engaged in gathering marine biological samples. The aquanaut is breathing the same helium-oxygen mixture as that inside the SEALAB.

SEALAB diver at work alongside the submersible decompression chamber.

It is clear that there will be a prolonged experimental period before useful operations at deep depths can become routine. The obstacles are so great and our knowledge is so limited of both the deep sea environment and man's ability to function in it that the challenge seems as formidable as the conquest of space.

The gain in the long run, however, appears to justify the effort. The Navy's undersea operations demand a salvage and submarine rescue capability far greater than we have today. Also, man's ability to be at home in the deep ocean environment can lead to radically new military tactics and strategy. Finally, man's conquest of the deep will add immeasurably to his knowledge of his own world so that he can better understand and regulate the environment which surrounds him.

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Defense Procurement Circular No. 23, Feb. 10, 1965. Termination of Plant Cognizance Procurement and Policies to be Followed After Such Termination; DOD Instruction 4105.59, dated Oct. 13, 1964, Subject: DOD Contract Administration Services Plant Cognizance Program; List of Plans Currently Under the DOD Contract Administration Services Plant Cognizance Program; Extension of Mandatory Effective Date for Section XIII, Government Property—Revision 8, dated Nov. 1, 1964.

Defense Procurement Circular No. 24, Feb. 26, 1965. Rights in Technical and other Data and Copyrights.

Each Defense Procurement Circular (DPC) is designed to place new or changed policies or procedures in effect prior to publication of an Armed Services Procurement Regulation (ASPR) revision. The items in each circular are cancelled after six months, unless specifically eliminated earlier by a new DPC or by publication in the ASPR. ASPR subscribers will receive Defense Procurement Circulars through the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

DOD Instruction 7800.5 "Use of Letters of Credit for Financing Grants, Contributions and Other Programs, Dec 2, 1964. Provides for the use, by all components of the DOD, of letters of credit as a means of financing grants, contributions and similar programs. In order to minimize the impact of premature withdrawals from the U.S. Treasury, letters of credit ordinarily will be utilized for advance financing of DOD programs carried out by (1) State or local governments and (2) educational and other institutions, including international organizations of which the U.S. is a member.

DOD Directive 4140.25, "Management of Petroleum Products," Jan. 6, 1965. Delineates responsibilities for the supply management of petroleum products and services related thereto.

DOD Directive 7060.3, "International Balance of Payments Program—Nonappropriated Fund Activities," Jan. 16, 1965. Sets forth policy and procedures governing Armed Services Exchange purchase of foreign goods and services by DOD nonappropriated fund activities (including nonappropriated concessionaire activities) outside the U.S., its possessions, and Puerto Rico, and construction, repair and maintenance of such activities.

DOD Instruction 7045.2, "DOD Programming System; Procedures for Program Changes," Jan. 29, 1965. Provides specific procedural guidance for the preparation, submission, review, evaluation and resolution of Program Change Proposals (PCP's) in support of the DOD Programming System.

DOD Instruction 7045.3, "DOD Programming System; Program Element Summary and Descriptive Data Sheets," Jan. 29, 1965. Provides specific procedural guidance in support of DOD Programming System for the preparation and submission of program element summary and descriptive data sheets to reflect approved programs or approval of program changes by the Secretary of Defense.

DOD Instruction 7045.4, "DOD Programming System; Procedures for Updating the Five-Year Force Structure and Financial Program (FYFS&FP)", Jan. 29, 1965. Provides procedural guidance and technical specifications for the submission of program change data in machine readable form in support of DOD Programming System.

DOD Instruction 5030.32, "Planning Procedures for Construction Projects in the National Capital Region," Feb. 10, 1965. Prescribed DOD policies and procedures to be followed by the Military Departments in submitting plans for projects proposed for construction in the National Capital Region (NCR), to the National Capital Planning Commission (NCPC) and the Commission of Fine Arts (CFA) for review.

DOD Directive 5160.51, "Time and Time Interval Standards and Calibration Facilities for Use by Department of Defense Components," Feb. 1, 1965. Establishes policy and assigns responsibility to a single DOD component for establishing, coordinating and maintaining capabilities for time and time interval (astronomical and atomic) for use by all DOD components, DOD contractors, and related scientific laboratories.

DOD directives and instructions may be obtained from:

Publications Distribution Branch
Office of the Secretary of Defense
Room 3B988, The Pentagon
Washington, D.C. 20301

Air Force Logistics Pamphlet No. 70–2, "Competition with Confidence Management Handbook," Dec. 14, 1964. Contains a general outline of the "Competition With Confidence" program, including a brief history which sketches its development from a unilateral Air Force program in 1955 to the present AFLC/AFSC Regulation 57–6, which utilizes the skills of both industry and Air Force.

DOD Engineering for Transportability Program, Dec. 1964. (Joint Service publication—AR 705–8, NAVMATINST 4600.5A, AFR 80–18, MCO 4610.14.) Establishes the responsibility and functions of the Transportability Agencies and prescribes policies and procedures for accomplishing the DOD Engineering for Transportability Program. The objective of this program is to assure that items of materiel are so engineered, designed and constructed that the required quantity can be efficiently transported.

DOD Incentive Contracting Guide, Jan. 19, 1965. (Joint Service publication—FM 38–34, NAVMAT P–4283, AFP 70–1–5, DSAH 7800.1.)

NAVMATINST 4000.15, "Management of Technical Data and Information in the Department of the Navy," Nov. 20, 1964. Incorporates into a single publication comprehensive statements of policy and procedures to govern the management of technical logistics data and information within the Department of the Navy.

Military Service publications may be obtained from the Service contract administration office administering company contracts.

Conference on New Technology. Contains several papers presented at the Conference on New Technology, which was held at the Lewis Research Center, Cleveland, Ohio, June 4–5, 1964, on the technology that makes our Nation's space flights possible.

Catalog No. NAS 1.21:5015 $1.00

Satellite Communications (Military-Civil Roles and Relationships). Prepared by the Military Operations Subcommittee of the Committee on Government Operations, 88th Congress, 2nd session, this report reviews six years of Government effort in promoting, planning, designing and developing communications satellites. It attempts to identify the basic policy issues in a complex and complicated field of Government activity and to recount what has been done to resolve

(*Continued on Page* 21)

NOTES FOR EDITORS

Editors seeking copies of speeches with appropriate photographs or additional information on any of the following article ideas are invited to contact the Chief, Magazine & Book Branch, Office of Assistant Secretary of Defense (Public Affairs), Washington, D.C. 20301, telephone: OXford 7-8010.

OUR PEAR-SHAPED, FOUR-CORNERED WORLD

Scientists at Johns Hopkins Laboratory working with the Navy satellite program have learned more about the physical shape of the earth in the past three years than man previously had learned in the last two hundred years. Through Navy satellites it is now known that the earth actually is pear-shaped with the southern hemisphere larger than the northern. There are literally four corners of the earth located near Peru, Ireland, New Guinea and south of Africa. This means the surface of the oceans is not level; and it is known that sea level at Dublin, Ireland, is 150 yards higher than sea level at Charleston, S.C. There are many other interesting facets to this newly acquired knowledge. For example, through a doppler study of satellites, the distance between Pt. Hueneme, Calif., and Fort Wayne, Ind., has been measured to within seven yards of the geodetic ground survey of the earth.

BIG BUSINESS IN TRAINING DEVICES

Advancements in technology have had a direct effect on the complexities of military weapons systems and the men who man them. This, coupled with increased costs in operating more advanced systems, has led to the development of synthetic training devices. The building and selling of training devices constitutes a billion-dollar-a-year industry in the United States. The Air Force, one of the major users, spends more than $100 million annually on the procurement of these devices in order to maintain proficiency. These devices range from simple "part-task" trainers to realistic replicas of our most sophisticated aircraft. Interest-trainers which substitute for the more expensive and dangerous method of operating real systems include the celestial trainer for navigators, the ultra-sonic radar-observer trainer, the B-52 and B-70

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PROBES

Naval scientists at the Flagstaff, Ariz., Naval Observatory, using a new 61-inch astrometric telescope, are discovering new data concerning the moon and stars not previously known. Some of these scientific advancements include: the most complete study made so far of the evolution of the stars through research in galactic clusters; the photographing and cataloging of faint stars to within 100 light years; first successful use of super cooling of photographic emulsion to increase sensitivity so that color photos may be obtained of galaxie; and relocation of 20 of the 28 known periodic comets sighted in the last five years. In addition, it is believed that the Flagstaff Observatory will provide the best pictures of the U.S. manned landing on the moon.

RESEARCH & DEVELOPMENT SPIN-OFF BENEFITS INDUSTRY

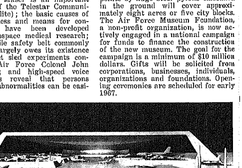
The DOD spending for research and development has provided many tangible benefits to industry. Much of the basic knowledge learned through defense research and development is applicable to industry but the continuing problem has been how best to disseminate this information. Some examples of beneficial spin-off to industry are: original research by a Michigan University team that determined that chromium-doped rubies provide necessary characteristics for Masers (the Maser is an important component of the Telestar Communications Satellite); the basic causes of motion sickness and means for controlling it have been developed through aerospace medical research; the automobile safety belt commonly used today largely owes its existence to the rocket sled experiments conducted by Air Force Colonel John Paul Stapp; and high-speed voice transmissions reveal that persons with throat abnormalities can be easily identified.

MEDICAL LABORATORY FOR ARMY SPECIAL FORCES

A portable medical laboratory developed for Army Special Forces will enable personnel to perform tests under extreme climatic field conditions. Packed in a lightweight nylon fabric case, it weighs 30 pounds, contains three plastic trays that include microscope, centrifuge, drugs and reagents needed for basic lab procedures. It can be carried on a man's back or dropped by parachute. The packet will float and remains waterproof even when weighted and submerged for as long as two weeks.

NEW AIR FORCE MUSEUM PLANNED

The present Air Force Museum at Dayton, Ohio, was founded in 1923. It was closed during the war and reopened in 1954. That year 10,000 people visited the museum. In 1963 the attendance reached 520,000. An annual attendance of 1,000,000 is forecast for 1970. The building now being used was formerly an aircraft engine overhaul shop. A new Air Force Museum will be constructed on a 200-acre tract of land at the western edge of Wright-Patterson Air Force Base, east of Dayton, Ohio. A canopy or roof supported at four suspension points by huge steel pylons embedded in the ground will cover approximately eight acres or five city blocks. The Air Force Museum Foundation, a non-profit organization, is now actively engaged in a national campaign for funds to finance the construction of the new museum. The goal for the campaign is a minimum of $10 million dollars. Gifts will be solicited from corporations, businesses, individuals, organizations and foundations. Opening ceremonies are scheduled for early 1967.



Artist's Conception of Air Force Museum

CALENDAR OF EVENTS

April 22–23: Quarterly Meeting of Committee on Military Exports, Defense Industry Advisory Council, Room 1E801, The Pentagon.

April 29: Annual Meeting of Property Administration Assn., at Hotel New Yorker, New York, N.Y. For information contact: Jack Griffiths, General Precision, Inc., 1500 Main Ave., Clifton, N.J.

May 1–5: International Congress of Astroscience, Los Angeles, Calif.

May 3–5: American Society of Quality Control Convention, Los Angeles, Calif.

May 3–9: National Science Fair—International, Kiel Auditorium, St. Louis, Mo. For information contact: Dr. Norman R. D. Jones, 5310 Lindenwood, St. Louis, Mo.

May 9–14: Electrochemical Society Conference, San Francisco, Calif.

May 10–14: National Conference on Peaceful Uses of Space, Sheraton-Jefferson Hotel, St. Louis, Mo. For information contact: Frank S. Purviance III, McDonnell Aircraft Corp., St. Louis, Mo.

May 12–14: Annual National Forum of American Helicopter Society, Washington, D.C.

May 16–19: American Institute of Chemical Engineers Conference, San Francisco, Calif.

May 16–22: Aviation/Space Writers Assn. Annual Meeting, Albuquerque, N.M.

May 18–21: American Petroleum Institute Conference, Houston, Tex.

May 21–June 1: Exercise CHEROKEE TRAIL V, Ft. Bragg, N.C.

May 25–27: Armed Forces Communications & Electronics Convention, Washington, D.C.

Armed Forces Day to be Celebrated

Week of May 8-16, 1965

The Department of Defense celebrates the sixteenth annual observance of Armed Forces Day on May 15, 1965. In order to attain maximum public and military participation, the Department will be host to the American public and our international neighbors during the period May 8–16, when the Armed Forces invite the people of the world to view and inspect this nation's defense capabilities and military readiness.

"Open House" events will be the principal feature of Armed Forces Day observances at all military posts, camps, stations, bases and defense facilities. Exhibits, exercises, parades, maneuvers and demonstrations will provide the American public the opportunity to view and inspect the preparedness of their Armed Forces, and the people of the world the occasion to see first-hand the strongest U.S. peace time military organization in history.

Power for Peace, the Armed Forces Day slogan for the past 11 years, symbolic of our national policy, will continue to be used.

Information on national, state or local plans for the 1965 Armed Forces Day observances, May 8–16, may be obtained from any headquarters of the regular or reserve components of the Armed Forces or from the National Coordinator, Armed Forces Day, Office of the Assistant Secretary of Defense (Public Affairs), Room 2E772, The Pentagon, Washington, D.C. 20301.

Nils A. Lennartson Dep. Asst. Sec. Def. for Public Affairs Resigns

Nils A. Lennartson

Nils A. Lennartson has resigned as Deputy Assistant Secretary of Defense for Public Affairs, effective April 10, 1965.

Mr. Lennartson has accepted appointment as President of the Railroad Progress Institute and assumed his new duties in Chicago in mid-April.

Appointed Deputy Assistant Secretary of Defense for Public Affairs January 17, 1961, Mr. Lennartson was nominated by the Department of Defense for a Rockefeller Public Service Award in 1964.

Mr. Phil Goulding, military reporter for the *Cleveland Plain Dealer*, was named Mr. Lennartson's successor. Mr. Goulding assumed his new duties on April 19.

Bibliography

(*Continued from Page* 19)

them. Communications satellite experiments and the history of Project Advent are contained in the annexes. Catalog No. Y 4.G 74/7:C 73/4 45¢

Publications that require remittance are available for purchase at U.S. Government Printing Office, Washington, D.C.

Army Unfunded Program

(*Continued from Page* 9)

necessary to complete the study. This will include consideration for sponsorship of the company for the "Field of Interest Register" of the Defense Documentation Center. Such sponsorship entitles the company to access to those documents distributed by the Center which are related to their approved studies.

Defense Documentation Center Cuts Costs for Small Firms in R&D

Many small firms having research and development (R&D) contracts with Federal activities are cutting costs through a documentation service provided by the Defense Documentation Center (DDC), Cameron Station, Alexandria, Va., a field activity of the Defense Supply Agency.

DDC assists R&D activities, small or large, by supplying them, without charge, with documents pertaining to past and current efforts in research, development, test and evaluation (RDT&E). Documentation services are available to DOD activities, defense contractors, other U. S. Government activities and their contractors, grantees and potential contractors.

The systematic and timely announcement and availability of technical documents help significantly to prevent and reduce unnecessary duplication of R&D projects and to accelerate the completion and application of research information in order to shorten the "concept-to-delivery" cycle. The DDC document collection totals more than 750,000 different titles, covering all areas of science and technology.

By regulation, 20 copies of all scientific and technical reports generated by defense funding must be submitted to DDC. Exceptions to this requirement are limited to highly sensitive reports and to those reports which have no scientific or technical value. The Center processes and stores the reports for retrieval, announces their availability for official use, retrieves them on request, and supplies copies.

R&D activities having contracts or grants from Federal agencies can register for DDC services by completing the Center's registration form and submitting this form for approval to the Federal office responsible for the project or activity for which service is required. DDC services to registered users can continue for the duration of the contract or grant.

Twice each month the Center publishes and distributes the *Technical Abstract Bulletin* (*TAB*) to more than 6,200 military, industrial, educational and non-profit organizations which are authorized and registered for DDC services. Between 1,500 and 2,500 individual current document announcements are presented in each issue.

Registered users are supplied stocks of pre-punched data processing forms which are used in requesting copies of the documents believed to be pertinent to their current R&D projects. Users may request either hard copies of the documents or microform copies (16- or 35-mm film strips or microfiche).

DDC offers a bibliography search service through which the user receives complete descriptions of selected documents in the collection deemed pertinent to a specific R&D problem.

DDC also provides a referral service to identify, in answer to requests, DOD-sponsored Information Analysis Centers where state-of-the-art information may be obtained regarding specific R&D questions.

Field Services offices operated by DDC receive microfilm copies of all documents as they are obtained by the Center and announced in TAB. In these regional offices R&D personnel of registered user organizations may review the documents and reproduce selected pages on reader-printer equipment. Following is a list of DDC Field Services offices:

John M. Berry, Chief (DDC-OFW)
Cameron Station, Bldg. 5
5010 Duke Street
Alexandria, Va. 22314
Phone: (Code 202) OXford 8-1864

Frank Hennessy, Chief (DDC-OFB)
L. G. Hanscom Field, Bldg. 1210
Bedford, Mass. 01730
Phone: (Code 617) CRestview 4-6100, Ext. 2056

Paul R. Stauffer, Chief (DDC-OFD)
Bldg. 47, Area B
Wright-Patterson AFB, Ohio 45433
Phone: (Code 513) 253-7111, Ext. 35212

George M. Tsujimoto, Chief (DDC-OFL)
Los Angeles Air Force Station
Area B, Bldg. 32-D
Air Force Unit Post Office
Los Angeles, Calif. 90045
Phone: (Code 213) 643-0236

Harold F. Nutzhorn, Chief (DDC-OFN)
346 Broadway, Room 801
New York, N. Y. 10013
Phone: (Code 212) 962-5858

James L. Ferguson, Chief (DDC-OFS)
452 De Guigne Drive
International Science Center
Sunnyvale, Calif. 94086
Phone: (Code 408) 246-4501

Services to DDC users are also available at the following office:

F. E. Croxton, Director
Redstone Scientific Information Center
Bldg. 4484
Redstone Arsenal, Ala. 35809
Phone: (Code 205) 876-6451

For additional information concerning the mission, procedures and services of DDC, write to: Defense Documentation Center, Attn: DDC-PA, Bldg. No. 5, Cameron Station, Alexandria, Va. 22314.

Vice Chairman, New Members Appointed to The Defense Science Board

A new vice chairman and four new members have been appointed to The Defense Science Board by Secretary of Defense Robert S. McNamara.

Patrick E. Haggerty, President of Texas Instruments, Inc., Dallas, Tex., succeeds Dr. Allen E. Puckett, Executive Vice President of Hughes Aircraft Co., whose term as vice chairman has expired. Dr. Puckett continues as a member of the board.

The four new members are: Dr. Robert W. Cairns, Director of Research, Hercules Powder Co.; Major General James McCormack, USAF (Ret.), Vice President of the Massachusetts Institute of Technology; Perry W. Pratt, Vice President and Chief Scientist, United Aircraft Corp.; and Dr. Andrew D. Suttle, Jr., Vice President for Research and Professor of Chemistry, Texas A & M University. They succeed four members whose terms also expired last December.

The Defense Science Board is chartered as the senior technical advisory body in the Department of Defense. It is composed of members appointed from civilian life by the Secretary of Defense and of members representing major Federal agencies.

The Board advises the Secretary of Defense, through the Director of Defense Research & Engineering, on scientific and technical matters of interest to the Department of Defense.

DEFENSE PROCUREMENT

Contracts of $1,000,000 and over awarded during month of March 1965:

DEFENSE SUPPLY AGENCY

1—**Humble Oil & Refining Co.**, Houston, Tex. $20,000,187. 240,448,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Standard Oil of California, Western Operations, Inc.**, San Francisco, Calif. $14,846,910. 151,716,400 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**American Oil Co.**, Chicago, Ill. $11,698,482. 120,523,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Continental Oil Co.**, Houston, Tex. $11,101,416. 124,845,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Socony Mobile Oil Co., Inc.**, New York, N. Y. $11,143,302. 125,676,200 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Ashland Oil & Refining Co.**, Ashland, Ky. $7,059,764. 73,535,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Cities Service Oil Co.**, New York, N. Y. $7,022,200. 80,413,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Sunray DX Oil Co.**, Tulsa, Okla. $4,832,637. 54,652,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Signal Oil & Gas Co.**, Houston, Tex. $4,758,800. 58,000,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Suntide Refining Co.**, Tulsa, Okla. $4,349,810. 53,407,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Union Oil Co. of California**, Los Angeles, Calif. $4,279,257. 43,810,200 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Sinclair Refining Co.**, New York, N. Y. $4,122,048. 49,560,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Texaco, Inc.**, New York, N. Y. $3,792,790. 45,686,428 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**California Oil Co. (Standard Oil of Texas)**, El Paso, Tex. $3,693,165. 39,250,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Atlantic Refining Co.**, Philadelphia, Pa. $2,847,300. 31,800,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

Contract Index
Contract information is listed in the following sequence:
Date — Company — Dollar Value — Material—Location
Work Performed—Contracting Agency

—**Douglas Oil Co. of California**, Los Angeles, Calif. $2,342,403. 23,730,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Sun Oil Co.**, Philadelphia, Pa. $2,109,257. 22,260,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Triangle Refineries, Inc.**, Houston, Tex. $1,982,300. 21,500,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**American Petrofina Co. of Texas**, Dallas, Tex. $1,868,760. 19,500,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Shell Oil Co.**, New York, N. Y. $1,542,240. 16,800,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Standard Oil Co. (Ohio)**, Cleveland, Ohio. $1,485,000. 15,000,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Great Northern Oil Co.**, Minneapolis, Minn. $1,429,305. 15,000,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Marathon Oil Co.**, New York, N. Y. $1,307,088. 15,120,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Derby Refining Co. (Div. of Colorado Oil & Gas Corp.)**, Wichita, Kan. $1,234,130. 15,000,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Hunt Oil Co.**, Dallas, Tex. $1,044,000. 12,000,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

—**Kerr-McGee Oil Industries, Inc.**, Oklahoma City, Okla. $1,015,000. 12,500,000 gallons of jet fuel. Defense Fuel Supply Center, Washington, D. C.

2—**Delta Petroleum Co.**, New Orleans, La. $3,499,716. 9,109,125 gallons of lubricating oil. Defense Fuel Supply Center, Washington, D. C.

5—**Eastman Kodak Co.**, Rochester, N. Y. $1,365,906. 27,030 rolls of aerial film. Rochester. Defense General Supply Center, Richmond, Va.

12—**Standard Oil Co. of California, Western Operations, Inc.**, San Francisco, Calif. $1,852,154. 368,000 gallons of automotive gasoline and 14,929,000 gallons of diesel oil. Defense Fuel Supply Center, Washington, D. C.

15—**Sportwelt Shoe Co., Inc.**, Nashua, N. H. $1,946,970. 646,836 pairs of combat boots. Nashua and Newport. N. H. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

22—**Vitro Minerals Corp.**, New York, N. Y. $1,137 192,750 tons of coal. Cripple Creek Mine, Sunt Alaska. Defense Fuel Supply Center, Wa ton, D. C.

ARMY

1—**U. S. Rubber Co.,** Mishawaka, Ind. $1,060,244. Rubber fuel tanks for UH-1D IROQUOIS helicopters. Kitchener, Ontario, Canada, and Mishawaka. Army Aviation Command (AMC), St. Louis, Mo.

2—**Bendix Corp., Bendix Radio Div.,** Baltimore, Md. $6,644,891. 112 radio sets (AN/GRC/68 and AN/GRC/66) with ancillary items. Baltimore. U.S. Army Electronics Command (AMC), Ft. Monmouth, N. J.

—**Frank's Dredging Co., Guy F. Atkinson, and Pacific Dredging Co.,** Long Beach, Calif. $1,091,620. Dredging and excavation work on the Ventura Harbor Project. Port Hueneme, Calif. Engineer Dist., Los Angeles, Calif.

—**Blount Brothers Corp.,** Montgomery, Ala. $4,794,000. Construction of the Saturn I second test position at the NASA Test Facility. Hancock County, Miss. Engineer Dist., Mobile, Ala.

—**Beaver State Contractors, Inc.,** Eugene, Ore, $1,056,442. Work on the Blue River Reservoir Project. Eugene. Engineer Dist., Portland, Ore.

—**Sante Fe Engineers, Inc.,** Lancaster, Calif. $1,366,511. Construction of a high temperature loads calibration facility and extension of utilities at the Flight Research Center, Edwards AFB, Calif. Muroc, Calif. Los Angeles Engineer Dist.

3—**White Motor Co.,** Lansing, Mich. $1,236,950. Production Engineer services for 2½-ton trucks. Lansing. U. S. Army Mobility Command (AMC), Warren, Mich.

4—**ITT Corp., ITT Kellogg Communications Systems Div.,** Chicago, Ill. $1,350,000. Two transportable electronic switchboards. Chicago. Electronics Command (AMC), Philadelphia, Pa.

5—**General Dynamics Corp.,** Pomona, Calif. $2,172,777. REDEYE research and development program. Pomona. Los Angeles Procurement Dist. (AMC), Pasadena, Calif.

—**Itek Corp.,** Lexington, Mass. $2,397,505. Design, fabrication and test of a digital mapping system for production of topographic maps from aerial photographs. Lexington. Engineer R&D Labs. (AMC), Ft. Belvoir, Va.

—**Colorado Fuel & Iron Corp.,** Denver, Colo. $2,274,735. Work on the John Day Lock and Dam, Columbia River Project. Minnequa, Colo. Dist. Corps of Engineers, Walla Walla, Wash.

—**Oberg Construction Co.,** Northridge, Calif. $1,097,197. Construction of the Materiel Services Building at the Jet Propulsion Lab. (JPL), Pasadena, Calif., and the relocation of two JPL prefab buildings to the Goldstone Space Center at Barstow, Calif. Dist. Corps of Engineers, Los Angeles, Calif.

8—**R. R. Hensler, Inc.,** Sun Valley, Calif. $7,966,006. Work on the Alamo Reservoir Dam and Appurtenances, Colorado River Basin, Ben Williams River, Arizona Project. Mohave and Yuma counties, Ariz. Dist. Corps of Engineers, Los Angeles, Calif.

9—**General Electric Co., Ordnance Div.,** Burlington, Vt. $1,885,250. Tooling and 7.62-millimeter aircraft machine guns with pods. Burlington. U. S. Army Weapons Command (AMC), Rock Island, Ill.

—**Clement Brothers Co.,** Hickory, N. C. $3,863,722. Construction and excavation work on the Pat Mayse Dam and Reservoir, Sander Creek, Texas Project. Lamar County, Tex. Engineer Dist., Tulsa, Okla.

10—**TRW Space Technology Labs., Inc.,** Redondo Beach, Calif. $1,460,000. Classified research and development. Redondo Beach. U. S. Army Electronics Command (AMC), Ft. Monmouth, N. J.

11—**Union Carbide Corp., Consumers Products Div.,** New York, N. Y. $1,235,977. Dry batteries for tactical radio sets. Chemway, N. C. U. S. Army Electronics Command (AMC), Ft. Monmouth, N. J.

—**Blount Brothers Corp.,** Montgomery, Ala. $5,628,400. Work on the Cross Florida Barge Canal Project. Levy County, Fla. Dist. Corps of Engineers, Jacksonville, Fla.

—**Stolte, Inc.,** Oakland, Calif. $4,509,000. Construction of aircraft control and warning sites in the Republic of Korea. U. S. Army Engineer Dist., Far East.

—**University of Wisconsin,** Madison, Wis. $1,200,000. Operation of a Mathematics Research Center for the U. S. Army. Chicago Procurement Dist. (AMC), Chicago, Ill.

—**Brinkerhoff Drilling Co., Inc.,** Denver, Colo. $1,289,591. Rehabilitation work on power and data facilities, and construction of small support structures at Eielson AFB, Alaska. Dist. Corps of Engineers, Anchorage, Alaska.

12—**General Electric Co.,** Pasco, Wash. $1,927,323. Equipment to be used on the John Day and Little Goose Locks and Dams. Philadelphia, Pa. Dist. Corps of Engineers, Walla Walla, Wash.

—**Mike Bradford & Co., Inc.,** Miami, Fla. $3,232,237. Construction of the Components Service Facility at the NASA Mississippi Test Facility. Hancock County, Miss. Dist. Corps of Engineers, Mobile, Ala.

—**United Aircraft Corp., Sikorsky Aircraft Div.,** Stratford, Conn. $1,500,000. Project definition phase of an Army Advanced Aerial Fire Support System. Stratford. Transportation Research Command (AMC), Ft. Eustis, Va.

15—**Honeywell, Inc., Aeronautical Div.,** St. Petersburg, Fla. $3,336,000. Classified electronics equipment. St. Petersburg. Electronics Command (AMC), Ft. Monmouth, N. J.

—**Norris-Thermador Corp.,** Los Angeles, Calif. $1,724,732. 105-millimeter cartridge cases. Vernon, Calif. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—**Philco Corp., Aeronautics Div.,** Newport Beach, Calif. $1,492,660. Design, development, fabrication and testing for the CHAPARRAL Air Defense System. Newport Beach. U. S. Army Missile Command (AMC), Redstone Arsenal, Huntsville, Ala.

16—**Standard Dredging Co. and Great Lakes Dredge & Dock Co.,** New York, N. Y. $3,281,460. Work on the Chesapeake and Delaware River Canal Project. Elk River Section of the canal. Dist. Corps of Engineers, Philadelphia, Pa.

—**Guy F. Atkinson,** Long Beach, Calif. $2,679,970. Work on the San Gabriel River Improvement Project. Long Beach. Dist. Corps of Engineers, Los Angeles, Calif.

17—**Fred R. Comb, Jr., Inc.** Minneapolis, Minn. $1,145,512. Construction of a two-story addition to an existing Logistical Facility Depot at Tinker AFB. Oklahoma City, Okla. Dist. Corps of Engineers, Fort Worth, Tex.

18—**General Motors Corp., Chevrolet Motors Div.,** Detroit, Mich. $1,468,225. 271 motor buses (ambulance conversion). Austin, Tex. and St. Louis, Mo. Army Tank Automotive Center (AMC), Warren, Mich.

—**Clement Brothers Co.,** Hickory, N. C. $15,422,435. Excavation and construction work on the Carters Dam Project. Carters, Ga. Dist. Corps of Engineers, Mobile, Ala.

19—**Kaiser Jeep Corp.,** Toledo, Ohio. $1,698,187. 984 ¼-ton utility trucks. Toledo. Army Tank Automotive Center (AMC), Warren, Mich.

22—**Honeywell, Inc., Ordnance Div.,** Hopkins, Minn. $1,110,533. Bomb dispensers for the Air Force. Hopkins. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

23—**General Dynamics Corp., General Dynamics/Pomona,** Pomona, Calif. $16,384,822. A classified quantity of REDEYE guided missiles. Pomona. Los Angeles Procurement Dist. (AMC), Pasadena, Calif.

—**General Dynamics Corp., General Dynamics/Pomona,** Pomona, Calif. $6,648,776. Engineering services for REDEYE missile program. Pomona. Los Angeles Procurement Dist. (AMC), Pasadena, Calif.

24—**Josanco, Inc.,** Tonawanda, N. Y. $1,184,145. Work on flood protection at Smokes Creek, Lackawanna, New York Project. U. S. Army Engineer Dist., Buffalo, N. Y.

—**Armstrong Co., Inc. and Anderson Construction Co.,** Ames, Iowa. $3,983,819. Work on the Marion Dam and Reservoir, Cottonwood River, Kansas Project. Tulsa Dist. Corps of Engineers, Tulsa, Okla.

—**Brookfield Co., Inc. and Baylor Construction Corp.,** New York, N. Y. $8,083,075. Work on the Hurricane Barrier, Stamford, Connecticut Project. Stamford. U. S. Army Engineer Div., New England, Waltham, Mass.

—**General Motors Corp., Detroit Diesel Engine Div.,** Detroit, Mich. $3,007,200. 1,200 diesel engines. Detroit. Army Tank Automotive Center (AMC), Warren, Mich.

—**Heil Co.,** Milwaukee, Wis. $7,669,815. 825 semitrailers. Milwaukee. Army Tank Automotive Center (AMC), Warren, Mich.

—**Benson Mfg. Co.,** Kansas City, Mo. $2,903,655. 1,074 stainless steel tanks. Kansas City. Edgewood Arsenal, Edgewood, Md.

25—**Stevens Mfg. Co.,** Ebensburg, Pa. $1,420,055. 5,220 ¼-ton cargo trailers. Ebensburg. Army Tank Automotive Center (AMC), Warren, Mich.

—**Remington Arms Co., Inc.,** Bridgeport, Conn. $2,362,512. 5.56mm cartridges. Bridgeport. Frankford Arsenal (AMC), Philadelphia, Pa.

26—**Firestone Tire & Rubber Co.,** Akron, Ohio. $1,820,012. Shoe assemblies for M48 and M60 tanks. Noblesville, Ind. Procurement Dist. (AMC), Cleveland, Ohio.

—**Great Lakes Dredging & Dock Co.,** New York, N. Y. $1,994,000. Dredging work on the Chelsea River and Boston Harbor Project. Boston, Mass. U. S. Army Engineer Div., New England, Waltham, Mass.

—**General Motors Corp., Allison Div.,** Indianapolis, Ind. $1,389,180. Transmissions (TX–100–1) for use in various vehicles. Indianapolis. Procurement Dist. (AMC), Cincinnati, Ohio.

—**McKenzie Construction Co.,** San Antonio, Tex. $1,729,850. Construction of a composite recruit training and housing facility at Lackland AFB. San Antonio. Dist. Corps of Engineers, Fort Worth, Tex.

—**Chamberlain Corp., Scranton Army Ammunition Plant,** Scranton, Pa. $3,516,775. 155mm projectiles. Scranton. Procurement & Supply Agency (AMC), Joliet, Ill.

29—**Norcoast Constructors, Inc. and Morrison-Knudson, Inc.,** Seattle, Wash. $4,222,780. Construction of support and technical facilities in connection with an underground project and maintenance and operation of a camp site at Amchitka Island, Alaska. Dist. Corps of Engineers, Anchorage, Alaska.

—**Amron Corp.,** Waukesha, Wis. $1,478,474. Cartridge cases for the 20mm gun for the Air Force. Waukesha. Frankford Arsenal (AMC), Philadelphia, Pa.

—**Lincoln Winn, Jr.,** Orinda, Calif. $1,567,733. 100 units of family housing at Presidio of San Francisco, Calif. Dist. Corps of Engineers, Sacramento, Calif.

—**Raytheon Co.,** Lexington, Mass. $8,907,548. Design and development of the HAWK missile system. Bedford, Mass. U. S. Army Missile Command (AMC), Redstone Arsenal, Huntsville, Ala.

30—**Guy F. Atkinson,** Long Beach, Calif. $4,536,814. Excavation and construction work on the Coyote Creek Channel Project. Sante Fe Springs, Calif. Engineer Dist., Los Angeles, Calif.

—**Sandkay Construction Co., Inc.,** Ephrata, Wash. $1,919,481. Construction and excavation work on the Dorshak Dam and Reservoir Project. Ahsahka, Idaho. Dist. Corps of Engineers, Walla Walla, Wash.

—**Kaiser-Jeep Corp.,** Toledo, Ohio. $4,310,656. 209 5-ton trucks of various body types. South Bend, Ind. U. S. Army Mobility Command (AMC), Warren, Mich.

31—**United Aircraft Corp., Hamilton Standard Div.,** Broad Brook, Conn. $1,178,068. 65 manual telephone central office sets (AN/TTC–7). Broad Brook. U. S. Army Electronics Command (AMC), Ft. Monmouth, N. J.

—**Admiral Corp.,** Chicago, Ill. $2,589,222. 1,833 radio sets. Chicago. U. S. Army Electronics Command (AMC), Ft. Monmouth, N. J.

—**Peter Kiewit Sons Co. and Al Johnson Construction,** Omaha, Neb. $16,484,500. Construction work on the Arkansas River and Tributaries Project. Little Rock, Ark. U. S. Army Engineer Dist., Little Rock, Ark.

—**Stevens Mfg. Co.,** Ebensburg, Pa. $1,415,810. 5,219 ¼-ton, 2-wheel cargo trailers. Ebensburg. Army Tank Automotive Command (AMC), Warren, Mich.

—**Dale Building Co.,** Beverly Hills, Calif. $2,730,680. Construction of 190 family housing units at Fort Ord. Monterey, Calif. U. S. Army Engineer Dist., Sacramento, Calif.

—**Buxmont Ordnance Co.,** a subsidiary of the **J. W. Rex Co.,** Landsdale, Pa. $2,862,873. Ordnance items. Berwick, Pa. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—**Martin Marietta Corp.,** Orlando, Fla. $1,957,000. Improved Program Test Station research and development, engineering and production prototypes for the PERSHING weapon system. Orlando. U. S. Army Missile Command (AMC), Huntsville, Ala.

—**Thiokol Chemical Corp.,** Bristol, Pa. $1,269,453. Loading, assembling and packing of signal equipment. Long Horn Ammunition Plant, Marshall, Tex. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—**U. S. Rubber Co.**, New York, N. Y. $1,086,217. Layaway maintenance and support services at the Joliet Ammunition Plant. Joliet, Ill. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—**Motorola, Inc.**, Scottsdale, Ariz. $1,394,720. 26 radar data transmitting sets; 26 test fabrication kits; 16 radar data receiving sets, and ancillary items. Scottsdale. U. S. Army Electronics Command (AMC), Ft. Monmouth, N. J.

NAVY

1—**AVCO Corp.**, Richmond, Ind. $4,957,584. Arming and fuzing devices for POLARIS missiles. Richmond. Special Projects Office.

—**Sparton Electronics Div., Sparton Corp.**, Jackson, Mich. $2,307,379. Sonobuoys and associated equipment. Jackson. Bureau of Naval Weapons.

2—**General Dynamics Corp.**, Pomona, Calif. $79,634,615. TERRIER/TARTAR missiles. Pomona. Bureau of Naval Weapons.

3—**Triumph Storecrafters Corp.**, Houston, Tex. $2,536,800. Construction of 112 36-foot amphibious assault boats. Channelview, Tex. Bureau of Ships.

4—**Reed & Martin International, Inc.**, Honolulu, Hawaii. $1,395,000. Construction of an enlisted mens club at the U. S. Naval Station, Pearl Harbor, Oahu, Hawaii. Dist. Public Works Officer, 14th Naval Dist., Bureau of Yards & Docks.

—**Northrop Corp., Nortronics Div.**, Anaheim, Calif. $1,071,923. POLARIS missile checkout and readiness equipment. Anaheim. Special Project Office.

5—**Alaska Puget United Transportation Co.** (a joint venture composed of the Alaska Barge & Transport Co., Vancouver, Wash., and Puget-United Transportation Co., San Francisco, Calif.). $14,300,000. Five-year contract for the annual resupply of U. S. installations in the Alaska-Aleutians area. The installations include sites of the Distant Early Warning line. Military Sea Transportation Service.

—**Ling-Temco-Vought, Inc., Range Systems Div.**, Dallas, Tex. $21,925,774. Modification, renovation, and repair of two existing range instramentation ships for use as APOLLO recovery ships. Dallas and the Avondale Shipyards, Inc., New Orleans, La. Bureau of Ships.

—**Western Electric Co.**, Winston-Salem, N. C. $6,044,500. Engineering and installation of oceanographic research stations. Winston Salem. U. S. Navy Purchasing Office, Washington, D. C.

—**Hughes Aircraft Co.**, Fullerton, Calif. $3,500,000. Major components of the Naval Tactical Data System which will be installed aboard Navy ships. Fullerton. Bureau of Ships.

8—**Litton Systems, Inc., Data Systems Div.**, Canoga Park, calif. $1,350,750. Spare parts to support the digital realtime computer used on the E–2A aircraft. Canoga Park. U. S. Navy Aviation Supply Office, Philadelphia, Pa.

—**Edward R. Marden Corp.**, Allston, Mass. $3,449.000. Construction of a mess hall at the U. S. Naval Station, Newport, R. I., and construction of an officer's candidate school dormitory at the U. S. Naval Base, Newport, R. I., Newport. Dist. Public Works Officer, 1st Naval Dist., Bureau of Yards & Docks.

—**Woods Hole Oceanographic Institution**, Woods Hole, Mass. $1,300,000. Research in the field of oceanography. Woods Hole. Office of Naval Research.

—**Technical Appliance Corp.**, Sherburne, N. Y., $1,024,693. Research in design, fabrication, installation and testing of antenna systems. Elephant Butte, N. M. and in Sherburne. Office of Naval Research.

9—**Heyward-Robinson Co., Inc.**, New York, N. Y. $1,190,007. Construction of an enlisted men's barracks at the U. S. Naval Submarine Base, New London. Groton, Conn. Dist. Public Works Officer, 3rd Naval Dist., Bureau of Yards & Docks.

—**Grumman Aircraft Engineering Corp.**, Bethpage, Long Island, N. Y. $34,200,000. C–2A aircraft and associated equipment. Bethpage. Bureau of Naval Weapons.

—**North American Aviation, Inc., Columbus Div.**, Columbus, Ohio. $6,000,000. OV–10A COIN aircraft. Columbus. Bureau of Naval Weapons.

—**Northrop Corp., Nortonics Div.**, Anaheim Calif. $7,323,000. 26 monitor and fault localizer test sets for use on radar and sonar equipment aboard naval ships. Anaheim. Bureau of Ships.

—**General Dynamics Corp., Electric Boat Div.**, Groton, Conn. $54,754,390. Construction of two nuclear powered attack submarines. Groton. Bureau of Ships.

—**Newport News Shipbuilding & Drydock Co.**, Newport News, Va. $56,974,000. Two nuclear powered attack submarines. Newport News. Bureau of Ships.

10—**Lockheed Aircraft Corp.**, Burbank, Calif. $1,480,832. Oceanographic research study in connection with sonar capabilities. Burbank. Bureau of Ships.

—**Wickes Industries, Inc.**, Camden, N. J. $4,254,048. 50 transportable electronics shops for field maintenance of radar and radio equipment. Camden. Marine Corps.

12—**Knapp-Stiles, Inc.**, Grand Rapids, Mich. $4,478,000. Construction of 300 family housing units at the Naval Station, Treasure Island, Calif. Dist. Public Works Officer, 12th Naval Dist., Bureau of Yards & Docks.

15—**Northwestern Motor Co.**, Eau Claire, Wis. $2,142,294. 535 aircraft towing tractors. Eau Claire. U. S. Navy Purchasing Officer, Washington, D. C.

16—**Control Data Corp.**, Rockville, Md. $1,130,011. Three digital plotter systems and 132 page printers, together with disk file storage units, repair parts, and technical manuals for use at Control Center Computers at various naval shore installations. St. Paul, Minn. Bureau of Ships.

17—**Technical Material Corp.**, Mamaroneck, N. Y. $1,560,471. Radio transmitters (AN/FRT 62) for use at Naval shore stations. Mamaroneck. U. S. Navy Purchasing Office, Washington, D. C.

18—**Norge Associates, Inc**, Manhasset, N. Y. $1,026,000. Construction of a fleet ballistic missile squadron administration building at the U. S. Naval Submarine Base, New London. Groton, Conn. Dist. Public Works Officer, 3rd Naval Dist., Bureau of Yards & Docks.

19—**National Bulk Carriers, Inc.**, New York, N. Y. $7,500,000. Use of the tanker SS AMTANK for five consecutive years. The 556-foot tanker of 23,584 tons will be used by MSTS in world-wide service for carrying petroleum products. MSTS.

—**Lockheed Missile & Space Co.**, Sunnyvale, Calif. $2,342,243. An exploratory research effort on the POSEIDON missile. Sunnyvale. Special Projects Office.

22—**General Dynamics Corp.**, General Dynamics/Pomona Div., Pomona, Calif. $1,033,064. Research and development work on TERRIER/TARTAR missiles. Pomona. Bureau of Naval Weapons.

—**Collins Radio Co.**, Cedar Rapids, Iowa. $1,592,298. 184 antenna multicouplers for use on general purpose communications equipment on naval ships. Cedar Rapids. Bureau of Ships.

23—**Loral Electronic System Div. of Loral Electronic Corp.**, New York, N. Y. $1,674,310. Computers for use in submarine detection aboard the S-2E antisubmarine warfare aircraft. New York. U. S. Navy Purchasing Office, Washington, D. C.

—**Boeing Co., Vertol Div.**, Morton, Pa. $1,351,295. Miscellaneous spare parts for the CH-46A and UH-46A helicopters. Morton. U. S. Navy Aviation Supply Office, Philadelphia, Pa.

24—**R. G. Webb, Inc.**, Riverside, Calif. $1,960,000. Construction of 140 family housing units at the Marine Corps Base, Camp Pendleton, Calif. Dir., South West Div., Bureau of Yards & Docks.

—**Texas Instrument Inc.**, Science Service Div., Dallas, Tex. $5,604,937. A marine geophysical and oceanographic survey of the eastern and central north Atlantic Ocean and the Norwegian and Mediterranean Seas. The high seas. U. S. Naval Oceanographic Office, Washington, D. C.

—**Alpine Geophysical Associates, Inc.**, Norwood, N. J. $5,811,447. A marine geophysical and oceanographic survey of the western north Atlantic Ocean and the eastern and central north Pacific Ocean. The high seas. U. S. Naval Oceanographic Office, Washington, D. C.

—**Ling-Temco-Vought, Inc.**, LTV Vought Aeronautics Div., Dallas, Tex. $6,761,200. Conversion of RF-8A aircraft to an RF-8G configuration, and associated equipment. Dallas. Bureau of Naval Weapons.

—**Norris Thermador Corp.**, Los Angeles, Calif. $3,363,745. Bomb bodies for Navy aircraft. Vernon, Calif. U. S. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—**Sperry Rand Corp.**, Sperry Gyroscope Co., Great Neck, N. Y. $8,500,000. Engineering and development services for modifications to TERRIER missile radar sets and ancillary equipment. Great Neck. Bureau of Naval Weapons.

26—**United Aircraft Corp., Hamilton Standard Div.**, Windsor Locks, Conn. $2,667,954. Propeller assemblies and associated equipment for Navy aircraft. Windsor Locks. Bureau of Naval Weapons.

30—**H. L. Coble Construction Co.**, Greensboro, N. C. $6,030,000. Construction of 440 family housing units at the Naval Station (WILLOUGHBY). Norfolk, Va. Dir. Atlantic Div., Bureau of Yards & Docks.

—**General Dynamics Corp., Electric Boat Div.**, Groton, Conn. $45,623,162. Construction of two ammunition ships (AE). Quincy, Mass. Bureau of Ships.

—**Bath Iron Works Corp.**, Bath, Maine. $43,754,100. Construction and delivery of three guided missile destroyers (DDG) being purchased by West Germany. Bath. Bureau of Ships.

—**Midwestern Instrument, Inc.**, Tulsa, Okla. $1,677,108. Tape recorders for use on naval ships. Tulsa. Bureau of Ships.

31—**Teledyne Systems Corp.**, Hawthorne, Calif. $13,840,000. Development of the Integrated Helicopter Avionics System (IHAS). Hawthorne. Bureau of Naval Weapons.

—**G. A. Goodwin**, Boulder, Colo. $1,460,563. Construction of 100 family housing units at the Marine Corps Air Station. Yuma, Ariz. Dir., Southwest Div., Bureau of Yards & Docks.

—**McDonnell Aircraft Corp.**, St. Louis, Mo. $22,708,000. F4B aircraft. St. Louis. Bureau of Naval Weapons.

—**Republic Aircraft Corp.**, Farmingdale, N. Y. $1,052,500. A POLARIS ship control trainer. Farmingdale. Special Projects Office.

AIR FORCE

2—**AiResearch Mfg. Co.**, Phoenix, Ariz. $1,186,650. Gas turbine engines. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—**North American Aviation, Inc., Autonetics Div.**, Anaheim, Calif. $1,330,000. Maintenance and repair of MINUTEMAN guidance and control equipment. Anaheim. Ballistics Systems Div. (AFSC), San Bernardino, Calif.

3—**O.M.I. Corp. of America**, Alexandria, Va. $1,031,958. Analytical photogrammetric plotter groups. Detroit, Mich. Rome Air Development Center (AFLC), Griffiss AFB, N. Y.

—**Sylvania Electric Products, Inc.**, Waltham, Mass. $2,999,997. Work on the MINUTEMAN ground electronics system. Buffalo, N. Y., and Waltham and Needham, Mass. Ballistic Systema Div. (AFSC), Norton AFB, San Bernardino, Calif.

—**General Electric Co.**, Philadelphia, Pa. $1,000,000. Work on the advanced re-entry program. Philadelphia. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

4—**Philco Corp., Aeronutronic Div.**, Newport Beach, Calif. $1,500,000. Research and development of a payload ejection mechanism. Newport Beach. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

—**Aerojet-General Corp.**, Sacramento, Calif. $3,153,000. Research and development for the TITAN III transtage engine. Sacramento. Space Systems Div. (AFSC), Los Angeles, Calif.

—**General Investment Co.**, Longview, Wash. $2,260,000. Construction of 150 family housing units at McChord AFB, Tacoma, Wash. Base Procurement Office, McChord AFB.

5—**Boeing Co.**, Seattle, Wash. $7,700,000. Research, development, test and engineering for modernization of Wings I through V of the MINUTEMAN weapon system. Seattle. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

—Boeing Co., Wichita, Kan. $2,395,000. Services and support for B–52 aircraft. Wichita. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—Radio Corp. of America, Defense Electronics Products, Moorestown, N. J. $16,445,657. Satellite tracking radar for the Ballistic Missile Early Warning System. Moorestown. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Bedford, Mass.

—General Motors Corp., Indianapolis, Ind. $1,820,396. Component improvement program for the T–56 series engine. Indianapolis. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

8—General Electric Co., Evendale Plant, Cincinnati, Ohio. $3,650,354. Compressor kits and technical data for J–79 engines. Cincinnati. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—IIT Research Institute, Chicago, Ill. $4,310,830. Operation of an electromagnetic analysis center for space studies. Annapolis, Md. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Bedford, Mass.

—North American Aviation, Inc., Columbus Div., Columbus, Ohio. $1,304,400. Missile procurement. Columbus. Air Proving Ground Center (AFSC), Eglin AFB, Fla.

—Northrop Corp., Norair Div., Hawthorne, Calif. $1,156,452. Spare parts for F–5 series aircraft. Hawthorne. Middletown Air Materiel Area (AFLC), Olmsted AFB, Pa.

9—Boeing Co., Seattle, Wash. $1,252,000. Aerospace ground equipment, training equipment and spare parts for MINUTEMAN Wing VI. Seattle. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

—Boeing Co., Seattle, Wash. $1,088,900. Missiles and related equipment for the sixth MINUTEMAN wing. Seattle. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

—Northrop Corp., Hawthorne, Calif. $3,662,669. F–5 series aircraft, including mobile training units and maintenance data. Hawthorne. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—Martin Marietta Corp., Baltimore, Md. $1,500,000. Integration and installation of government-furnished equipment to convert KC–135 aircraft to RC–135 configuration. Baltimore. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

10—Space Corp., Dallas, Tex. $1,304,544. Aircraft engine test stands. Dallas. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—General Electric Co., Cincinnati, Ohio. $1,857,410. F–4 aircraft ground equipment. Cincinnati. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—Hughes Aircraft Co., Culver City, Calif. $2,732,348. Spare components for an air/ground digital communications system. Culver City. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

11—TRW Space Technology Labs., Inc., Redondo Beach, Calif. $3,200,000. Work on space programs. Redondo Beach. Space Systems Div. (AFSC), Los Angeles, Calif.

—General Dynamics/Convair, General Dynamics Corp., San Diego, Calif. $1,196,120. Spare parts in support of the ATLAS/AGENA booster program. San Diego. Space Systems Div. (AFSC), Los Angeles, Calif.

—Boeing Co., Seattle, Wash. $2,000,000. Modification of RC–135 aircraft. Seattle. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

12—Cleveland Pneumatic Tool Co., Cleveland, Ohio. $1,047,046. Components for B–52 landing gears. Cleveland. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—General Dynamics Corp., Fort Worth, Tex. $1,769,053. Engineering services in support of B–58 aircraft. Fort Worth. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

—Sylvania Electric Products, Inc., Waltham, Mass. $3,905,500. Technical publications program for MINUTEMAN ground electronic systems. Buffalo, N. Y., and Waltham and Needham, Mass. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

15—Philco Corp., Philadelphia, Pa. $2,086,632. Radio communication equipment. Philadelphia. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Bedford, Mass.

—Belock Instrument Corp., College Point, N. Y. $4,247,778. Radar and aerospace ground equipment for C–141 and C–130 aircraft. Lawrence, Mass. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—General Electric Co., West Lynn, Mass. $8,000,000. Component improvement engineering for J–85 and T–58 series engines. West Lynn. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—North American Aviation, Inc., Los Angeles, Calif. $1,693,725. Services and materials for modification of F–100 series aircraft. Palmdale, Calif. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

16—North American Aviation, Inc., Los Angeles, Calif. $1,093,950. Aircraft wing fuel tanks. Los Angeles. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—AVCO Corp., Stratford, Conn. $2,934,316. A component improvement program for T–55 series engines. Stratford. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—General Motors Corp., Indianapolis, Ind. $1,214,664. T56–A–15 engines and related material. Indianapolis. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—Douglas Aircraft Co., Inc., Missiles & Space Systems Div., Santa Monica, Calif. $1,000,768. Launch support services for space programs at Vandenberg AFB, Calif. Space Systems Div. (AFSC), Los Angeles, Calif.

17—General Electric Co., Philadelphia, Pa. $1,477,794. Research and development of the MARK 12 re-entry program. Philadelphia. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

—Bell Aerospace Corp., Bell Aerosystems Co., Buffalo, N. Y. $2,500,000. Work on prototype rocket engines. Niagara Falls, N. Y. Space Systems Div. (AFSC), Los Angeles, Calif.

—TRW Space Technology Labs. of Thompson Ramo Wooldridge, Inc., Redondo Beach, Calif. $1,188,610. Technical and engineering services in support of TITAN II. San Bernardino, Calif. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

——Aerojet-General Corp., Astrionics Div., Azusa, Calif. $2,000,000. Modification and instrumentation of KC–135 aircraft. Azusa. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

18——Univac Div., Sperry Rand Corp., Washington, D. C. $4,852,370. Electronic data processing systems. Philadelphia, Pa. 2750th Air Base Wing Hq. (AFLC), Wright-Patterson AFB, Dayton, Ohio.

——Lear-Siegler, Inc., Grand Rapids, Mich. $1,955,622. Aircraft gyroscopes and spare parts. Grand Rapids. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

——Hallicrafters Co., Chicago, Ill. $1,550,000. Work on a classified project. Chicago. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

——Collins Radio Co., Cedar Rapids. Iowa. $1,059,870. Communications and navigation equipment for HC–130 and A–1E aircraft. Cedar Rapids. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

——General Electric Co., Re-entry Systems Dept., Philadelphia, Pa. $2,326,000. Development and test of space vehicles. Philadelphia. Space Systems Div. (AFSC), Los Angeles, Calif.

19——Philco Corp., Willow Grove, Pa. $1,200,000. A combat operations center computer and related equipment. Willow Grove. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Bedford, Mass.

——International Business Machines Corp., Washington, D. C. $4,185,234. Electronic data processing equipment Poughkeepsie, N. Y. 2750th Air Base Wing Hq. (AF-LC), Wright-Patterson AFB, Dayton, Ohio.

——Douglas Aircraft Co., Missiles & Space Systems Div., Santa Monica, Calif. $5,538,283. Calendar year 1965 launch support services at Vandenberg AFB, Calif. Space Systems Div. (AFSC), Los Angeles, Calif.

——General Electric Co., West Lynn, Mass. $8,000,000. Component improvement program for T–64 series engines. West Lynn. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

——General Motors Corp., Indianapolis, Ind. $12,089,031. T–56 series engines and related equipment. Indianapolis. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

——Curtiss-Wright Corp., Caldwell, N. J. $1,862,662. Equipment to modify C–133 propellers. Caldwell. Warner Robins Air Materiel Area (AFLC), Robins AFB, Ga.

22——Fairchild Camera & Instrument Corp., Syosset, N. Y. $1,562,600. Aircraft cameras. Syossett. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

24——Collins Radio Co., Cedar Rapids, Iowa. $6,191,450. Aircraft communication equipment. Cedar Rapids. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Mass.

——Litton Systems, Inc., Guidance & Control Systems Div., Woodland Hills, Calif. $3,011,688. Spare parts for the navigation system on the F–4 series aircraft. Woodland Hills. Middletown Air Materiel Area (AFLC), Olmsted AFB, Pa.

26——Lockheed Missiles & Space Co., Sunnyvale, Calif. $4,834,000. AGENA–D launch services for Eastern and Western Test Ranges during calendar year 1965. Space Systems Div. (AFSC), Los Angeles, Calif.

—North American Aviation, Inc., Autonetics Div., Anaheim, Calif. $179,018,913. Components for the improved MINUTEMAN guidance system. Anaheim. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

29—Hughes Aircraft Co., Culver City, Calif. $5,000,000 Modification of air weapons control interceptor systems in F–106 aircraft. Culver City. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—Martin Marietta Corp., Denver, Colo. $5,364,800. Follow-on TITAN II missiles and instrumentation range safety system kits. Littleton, Colo. Ballistic Systems Div. (AFSC), Noron AFB, San Bernardino, Calif.

30—North American Aviation, Inc., Autonetics Div., Anaheim, Calif. $12,173,918. Spare parts for MINUTEMAN guidance system. Anaheim. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—Hycon Mfg. Co., Monrovia, Calif. $3,000,000. Spare parts for the KS–72 camera system. Monrovia. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

31—Collins Radio Co, Cedar Rapids, Iowa. $3,596,799. Integration and installation of subsystems for the 484–L communications systems. Cedar Rapids. Electronics Systems Div. (AFSC), L. G. Hanscom Field, Mass.

—Aerodex, Inc., Miami, Fla. $3,374,563. Overhaul of R–4360 engines. Miami. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

ARPA Selects Three Contractors for Materials Research Programs

The Defense Department's Advanced Research Projects Agency has selected three contractors for programs of research in the materials field. The contracts will be awarded through the Military Services.

These contracts are unusual because in each case an industrial laboratory and a university will join forces to advance a field of materials technology of major interest to the DOD.

The contractors and the major fields of investigation are:

- Martin Co., Denver Div., will subcontract with the University of Denver and conduct a three-year program of research on the high energy rate forming of metals. This contract will be for approximately $1,000,000.
- Union Carbide Corp. will subcontract with the Case Institute of Technology and the Bell Aerospace Corp., and conduct a three-year program of research on carbon composit materials. This contract will be for approximately $2,500,000.
- Monsanto Research Corp. will subcontract with Washington University, St. Louis, Mo., and conduct a two-year program of research on high performance composites. This contract will be for approximately $2,000,000.

The science developed at the universities as well as the science developed in the industrial laboratories and elsewhere will be systematically and speedily applied to developing new materials and new processes. This "coupling" of science to applications will assist in developing the stronger, lighter, more versatile materials important to national defense.

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US/UK Plan Joint Development of Advance Lift Engine

In keeping with the objective of expanding cooperation in research and development with our allies, the United States and the United Kingdom are now investigating the possibility of negotiating a joint development program for an advanced lift engine for vertical and short take-off and landing aircraft (V/STOL).

There is a verbal understanding on the desirability of such a joint program and there is considerable hope that the economic and technical incentives will overcome some of the "legal wrinkles" that have hampered expansion of cooperative R&D in the past.

Last summer an agreement was signed between the two countries for a research program on the use of beryllium in aircraft engines. The beryllium project differs from the proposed lift engine program in that there is no end product or hardware and the legal business aspects are of lesser significance.

Work on evolving a joint development program is going on at two different levels. The technical objectives and planning are being worked out by the U.S. Air Force and the British Ministry of Aviation. Concurrently, representatives of the DOD Office of General Counsel and the Office of the Assistant Director of Defense Research & Engineering (International Programs) are discussing the business aspects with the Ministries of Defense and Aviation of the U.K.

The mechanics of getting a U.S. contractor together with a British firm do present some problems but it is believed that these can be resolved with the end product being a combination of the best of the two technologies. The U.S. is planning on extensive use of the technology generated in the light-weight gas generator demonstrator programs being carried out at present and foresees similar inputs from the British firm (Rolls-Royce) which has actively been producing lift engines as well as carrying on extensive developmental work in this area.

Neither the U.S. nor the U.K. have firm operational requirements for such an advanced lift engine but are entering into this joint development with the belief that an engine normally must lead aircraft development by one or two years. The main U.S. considerations for the present are for the use of such an engine in an airframe resulting from the U.S.-West Germany V/STOL studies directed toward a possible joint advanced V/STOL tactical fighter weapon system. Use is also foreseen in the application of lift engines in future military and possibly commercial transport aircraft.

DSA Supply Center Consolidation

The Defense Supply Agency (DSA) has initiated consolidation actions affecting five of its Supply Centers which is expected to produce a net savings of 521 jobs and reduce the Agency's operating costs by $6 million annually.

A new Defense Personnel Support Center will be formed in Philadelphia, Pa., which will consolidate in one organization the Defense Clothing and Textile Supply Center, Philadelphia; the Defense Medical Supply Center, Brooklyn, N.Y.; and the Defense Subsistence Supply Center, Chicago, Ill. The new center is expected to become operational in July 1965.

An additional consolidation is being effected through the transfer of inventory control functions for packaged petroleum, industrial gas cylinders, and chemicals, formerly assigned to the Defense Fuel Supply Center, Washington, D.C., to the Defense General Supply Center, Richmond, Va. Procurement of chemicals and industrial gas cylinders is also being transferred to the Richmond facility.

The procurement of packaged petroleum products and bulk fuels will continue as a function of the Fuel Supply Center in Washington.

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DEPARTMENT OF DEFENSE

ASSISTANT SECRETARY OF DEFENSE-PUBLIC AFFAIRS

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THE ARMY CUSTOMER

"Take a look at the man we're all working for. This is our 'Customer' — the ultimate user — and the ultimate weapon. Although he usually fights in large numbers, the occupation of the combat soldier is often a lonely one. He has quite a load on his shoulders — as measured both in mission and in deadweight pounds . . . ."

The foregoing is quoted from the presentation given by Major General Frank W. Moorman, Commanding General, U.S. Army Electronics Command, at the recently completed DOD-NSIA Advanced Planning Briefings for Industry. Highlights from all the Army addresses made at the briefings begin on page 17. Subsequent issues of the *Bulletin* will carry highlights of the Navy and Air Force presentations.

The Editors

DEFENSE INDUSTRY
BULLETIN

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The purpose of the *BULLETIN* is to serve as a means of communication between the Department of Defense (DOD) and its authorized agencies and defense contractors and other business interests. It will serve as a guide to industry concerning official policies, programs and projects, and will seek to stimulate thought by members of the defense-industry team in solving the problems that may arise in fulfilling the requirements of the DOD.

Material in the *BULLETIN* is selected to supply pertinent unclassified data of interest to the business community. Suggestions from industry representatives for topics to be covered in future issues should be forwarded to the Business & Labor Division.

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Economic Impact Data to be Reported by Contractors

The first two reporting formats and instructions of the new Cost and Economic Information System (CEIS), currently undergoing development in the Defense Department, have been cleared for test by the Bureau of the Budget. The two reporting formats are designed to provide DOD with information which will assist in assessing the economic impact of its various programs.

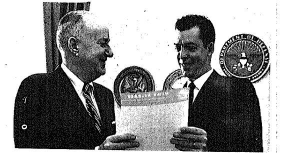
The policy of DOD is that the impact will not influence its weapon acquisition decisions. Nevertheless, it is important that the impact be known in order that other Government agencies, committees and organizations directly concerned can take such actions as may be desirable to alleviate adverse consequences of shifts in defense procurements.

The two reporting formats require plant-wide and individual project data. The plant-wide data includes a summary of employment on DOD projects, National Aeronautical and Space Agency projects and all other work. This format will also be utilized by NASA. The individual project data
includes employment and "costs
curred" for major DOD progran
Contractors will report on firm, co
tracted business only.

The reporting formats to be utiliz
in this test incorporate the sugge
tions and comments of the Militar
Departments, the Council of Defen
and Space Industry Associations a
a group of selected contractors. Su
gestions and comments obtained du
ing the test will be used to impro
the formats. Current plans call for t
installation of these two reporti
forms as a semi-annual requiremen
When the remaining portions of t
CEIS system are promulgated, t
system will replace the Defense Co
tractors Planning Report (DCPR
currently required from aircraft a
missile manufacturers.

The DOD-oriented plants which a
to be covered will be furnished t
formats and instructions directly b
the Military Department which h
the major defense work in the plan
NASA will request the plant-wide r
port from those plants in which it h
the dominant interest.

Newsman Phil Goulding New Dep. Asst. Sec. of Def. (Public Affairs)



Asst. Secretary of Defense (Public Affairs) Arthur Sylvester discusses ap
pointment with his new deputy, Phil G. Goulding.

Phil G. Goulding, who became Deputy Secretary of Defense (Public Affairs) on April 19, brings to his new position a thorough knowledge of the Pentagon "beat." Prior to the appointment, he was military affairs correspondent for the *Cleveland Plain Dealer*.

Mr. Goulding was born in San Francisco, Calif. He attended public schools in Shaker Heights, Ohio, and received a Bachelor of Science degree from Hamilton College, Clinton, N.Y.

During World War II, Mr. Goulding served as an officer in the U.S. Navy in both the European and Pacific theaters of operation.

Following his release from activ
military duty in 1947, Mr. Gouldin
started work for the *Cleveland Pla
Dealer*. Three years later he wa
transferred to the Washington Bu
eau. During his first seven years i
the nation's capital, Mr. Gouldin
covered general assignments, includin
Congress and National politics. Fo
the last eight years he has covere
military affairs.

Mr. Goulding succeeds Nils A. Len
nertson, who resigned on April 10
accept a position as President of th
Railway Progress Institute.

The Project Manager -- Manager Extraordinary

by

Major David I. Cleland, USAF

The phenomenon of an increasingly dynamic technology in weaponry and in industrial management since World War II has no precedent. During World War II and the Korean War the emphasis of defense effort in the acquisition of weaponry[1] centered around standardized products with high volume output. Management attention was directed to developing an optimum efficiency in the flow of work through the functional departments of the organization to the customer. Changing roles and missions in the military establishment, and in the design and development of modern weaponry, in more recent times has emphasized the need for greater consideration of relative trade-offs between cost, availability and operational compatibility of the weapon system. The need arose for a managerial philosophy which integrates the input from many collaborating management groups and organizations into a meaningful pattern of accomplishment. Manufacturing emphasis changed from *production* orientation to *project* orientation. *Project management* provides the *new way of thinking* required to bring about managerial unity directed to attaining specific project goals within a functional (or commodity) type of organizational structure.

Advent of the Project Manager.

The project manager may simply be defined as that individual who is appointed to accomplish the task of integrating functional and extra-organizational efforts directed toward the development and acquisition of weaponry. The concept of project management has evolved from traditional management theory; the mainstream of thought as developed in the "traditional" management school includes:

- Organizations function as an integrated entity on a vertical basis.
- A strong superior-subordinate relationship is required to preserve unity of command and to ensure unanimity of objective.
- Individual functional managers are parochial (and rightly so).
- Functional managers maintain lateral staff coordination to obtain integrated staff action.
- Organizational groups have a basic dichotomy, viz., *the line* and *the staff*.
- A scalar chain of authority relationships exists within the organization ranging from the ultimate authority to the lowest rank with the line of authority following every link in the chain.
- An employee should receive orders from one superior only.
- Work progresses among relatively autonomous functional units of an organization.

Maj. David I. Cleland, USAF; (M.S., Univ. of Pittsburgh; Ph.D., Ohio State Univ.) is assistant head of the Systems Management Department and Assistant Professor of Management, School of Engineering, Air Force Institute of Technology. He was formerly Program Manager for the KC–135B Command and Control System.

Unfortunately expertise in the science and art of management has lagged the advancements in development and engineering. Today's *project manager*, who becomes actively engaged in the development and acquisition of weaponry, is confronted with the coordination and integration of large aggregations of human and non-human resources; the greater part of such resources are outside the traditional patterns of organizational theory. Conventional military and business organizations have operated for the most part on a vertical basis; existing management theory was found lacking when it was realized that certain management relationships were evolving in the acquisition of large single-purpose projects which cut across interior organizational flows of authority and responsibility and radiated outside to autonomous organizations. Singular elements of risk and uncertainty, extensive involvement of resources and changing concepts in the employment of weaponry forced the development of a management philosophy which facilitates the blending and unifying of many defense and industrial organizations directed toward a common objective. Existing multilayered and diffused management structures within the industrial and defense organizations concerned complicated the management process. Since traditional management with its functional type of organization did not provide the management posture required, attention is being given to molding the organization around the task with the development of a new generation of management thinking. Thus *project management* appears as a management philosophy that has no organizational or functional constraints and provides for a refreshing *way of thinking* that allows for radical changes in organizational theory and in the management of diverse activities. Dr. John F. Mee, Mead-Johnson Professor of Management, Indiana University, describes a new "matrix" type of organization that has evolved in the defense industry. According to Professor Mee:

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[1] *Weaponry, a generic term, connotes the varied instruments intended to inflict damage to an enemy through the destruction of physical or mental capabilities. Weaponry includes that combination of equipment, skills and managerial know-how which, as an integrated entity, is capable of effectively destroying an enemy.*

U. S. SUPT. OF DOCS.

"The concept of a matrix organization entails an organizational system designed as a 'web of relationships' rather than a line and staff relationship of work performance. The web of relationships is aimed at starting and completing specific projects."[2]

One major difficulty of managerial personnel in adjusting to the concept of project management is their failure to understand its derivation. The construction industry early recognized the need for a management technique that permitted a unifying agent in the ad hoc activities involved in the construction of single, costly projects such as dams, turnpikes and large factories and buildings. In the military establishment, evidence of project management appeared in such endeavors as the Manhattan Project. In the defense industry/Government relationship there has developed a tendency towards greater and greater use of ad hoc offices concerned exclusively with the managerial integration of a single weapon system or subsystem. Increasing use of this managerial innovation indicates that it is becoming sufficiently ingrained in management thought and theory so that serious questions are being raised about the ability of the purely functional directed organization to adequately manage more than one major project successfully. Before the advent of the project manager there existed a tendency to rely on coordinative techniques (through the use of expeditors, coordinators, committees, etc.) to perform the integration task. Such techniques preserved the prerogatives of the functional groups but did not, as does project management, shape the organizational effort around the task or project. Project management was developed by the military/industrial complex as a means to satisfy the requirement for the management of certain defense resources from inception to operational employment. Is it a further refinement of traditional management thought and theory, or is it a revolutionary new development which portends radical changes in organizational theory and in the management of activities by the functional approach?

Characteristics of Project Management.

The project manager is an integrator-generalist; he is concerned with balancing relative factors of technology, schedule, cost and human resources. Within DOD organizations he manages across functional and organizational lines in order to bring together at one focal point the management activities required to accomplish project integration. Functional or commodity organizations provide a basic foundation on which to carry out project oriented activities; the project manager performs all the management functions but heavy emphasis is placed on the function of coordination, or the synchronizing of activities with respect to time and place. The project manager has certain other characteristics which tend to set him apart from the traditional or functional oriented manager:

- By providing a focal point for decision-making involving diverse interests in the organization, faster decisions are effected.
- As a project manager, he is directly and constitutionally involved in managing activities whose accomplishment requires extensive participation by organizations and agencies outside his direct control.
- The project manager's authority and responsibility cuts across functional and organizational lines; consequently, there is a deliberate conflict involved with these managers.
- As the focal point for project activities, the project manager determines the when and what of the project activities whereas the functional managers in supporting many different projects determine *how* the support will be given.
- The project manager, as a point of synthesis for the project, tasks organizational elements outside of his direct control. He pulls together diverse activities such as research, engineering, test, production, operational support, etc., all time-phased over the life of the project.

(Cont. on Page 14)

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[2] *Mee, John F., "IDEAtional ITEMS—Matrix Organization,"* Business Horizons, *Summer 1964, P. 70.*

ASPR Changes Made to Assist Military Sales

by

Mr. Peter Feigl

Office of International Logistics Negotiation

The recent promotion of military export sales by bot industry and the Military Departments has resulted i changes to the Armed Services Procurement Regulatio (ASPR). In turn, these changes to ASPR have made possible a growing dollar volume of military sales which ar being negotiated and contracted through U. S. Government channels on behalf of foreign governments.

The sales in question are those requiring joint an complementary pre- and post-contract Government-defens industry export promotion efforts.

The ASPR changes were necessary since some provisions of the regulation, which dealt primarily with U. S Government procurement action for the U. S. Arme Forces, proved inadequate or were not equally valid whe procurement action was initiated on behalf of anothe country on a government-to-government basis under th provisions of the Military Assistance Sales Program.

Thus, a country wishing to purchase a particular make model or type of equipment from the U. S. had to b given the right to specify such items since the questio of equipment standardization in smaller countries, fo instance, has a greater impact than procurement fron the lowest bidder, a major consideration in the larg quantity procurement activities in the U. S.

To cope with some of these special problems, change had to be made in the ASPR to provide the necessar procurement flexibility demanded by the Military Expor Program. One such change or addition is ASPR 6-705 published on March 6, 1964. Since its publication, however many questions relating to its interpretation have bee raised. For this reason, we offer herewith some background information which may make it easier for bot the industry and the defense reader to understand th intent of this particular ASPR section.

Background Policy.

On April 7, 1962, the Secretary of Defense stated i a memorandum to the Assistant Secretary of Defens (International Security Affairs), with copies to the Secretaries of the Army, Navy and Air Force: "I should lik to encourage sales of military equipment appropriate t the needs of foreign nations, in every possible way."

The Secretary of Defense in DOD Directive 5100.27, dated April 27, 1962, assigned to the ASD (ISA) th responsibility to: ". . . develop and coordinate DOD plan and programs for the export of military materiel an services to friendly foreign nations to the end tha foreign purchases from U. S. Government or industr will be maximized subject to considerations of overal national policy."

On August 15, 1962, the Deputy Secretary of Defens stated in a memorandum to the Secretaries of the Arm Navy and Air Force and to all other major DOD components: "Efforts to reverse the international flow of gol by establishing a balance of payments favorable to th U. S. require active and wholehearted cooperation betwee the DOD and U. S. industry in broadening and intensifying the military sales program. . . . I desire your enthusiastic assistance in insuring full participation in th program."

On July 9, 1963, the Secretary of Defense in a memorandum to the Secretaries of the Military Department and all other leading components of OSD emphasized th fact that the DOD has for some time been conductin intensified efforts to promote international sales of U. S equipment. He stated that in preparing for and conducting these negotiations, our objectives should be to:

(Cont. on Page 5

Guidelines for Developing and Submitting Unsolicited Proposals

U. S. Army

- *What are the criteria for deciding whether or not to submit an unsolicited proposal?*
- *What are some of the ground rules for preparing a proposal?*
- *On what basis is a proposal evaluated?*
- *Where should a proposal be submitted?*

To assist industry in answering these questions, the guidelines for developing and submitting unsolicited proposals to the U.S. Army are reproduced below. The guidelines for submission to the U.S. Navy and U.S. Air Force will appear in future issues.

Many important defense research and development and production programs result from unsolicited proposals made by companies having a sincere desire to apply their talents and facilities to national security. While not as many such proposals are adopted as may be considered desirable by industry, the Defense Department still considers unsolicited proposals a vital factor in fulfilling its military requirements.

An unsolicited research and development proposal is a document voluntarily initiated and prepared by a potential contractor offering a possible solution to a defense problem or requirement. It is usually the result of a decision by a company that it has conceived something new or novel and that, if sponsored, it can demonstrate that the idea has both scientific merit and a military application.

Criteria for Determining Whether to Submit a Proposal.

In deciding whether or not to submit a proposal, industry should ask, "Are we uniquely qualified or particularly competent in this field?" Even if the answer is no, the question should be re-phrased to ask, "Are we at *least* as well technically qualified as anyone else?" Finally, the question should be asked, "Would it make sense for the Government to give us a contract for this work?"

If a company is certain it is *uniquely* qualified to tackle a problem, it is probably in a position to write a highly acceptable proposal, with a good chance for support. The following might be considered one of the rules of thumb for any proposal: If a uniqueness by virtue of personnel, propriety techniques, patents, or facilities can be demonstrated, spell it out. It all adds up to being able to offer the Government the most economical answer to its problem. Not infrequently, companies are anxious to get into an entirely new area in order to diversify their activities. Considerable effort may then go into a proposal in vain for, unless the company can demonstrate that its activities in another field are applicable to the problem at hand, the chances are good that the proposal will not be accepted. Insofar as R&D is concerned, the Government is not normally in the role of assisting industrial organizations to diversify their activities. These, then, are some of the factors that must be weighed before deciding to submit a proposal.

Ground Rules for Preparing a Proposal.

In organizing a proposal, several considerations should be kept in mind. First, as with any technical document exceeding five or 10 pages, a summary is desirable. This permits the sense of the proposal to be gathered at once and helps orient the reader.

Following the summary, an introduction may be desirable, depending upon the circumstances. Basically, an introduction is intended to orient the reader, give him the background, acquaint him with the problem and lead him into the body of the proposal. If the summary has already done this, it of course is not worthwhile to repeat the entire message solely for the sake of having an introduction. In some cases, the introduction is a logical place to present additional information that will help justify the approach selected. This may take the form of information regarding some unique process or technique developed which will be particularly well suited to the problem, or a brief explanation of the potential the proposal offers for other problems facing the Army agency. In either case, the intent is the same—to offer evidence supporting the proposal.

The next major portion of the proposal is usually the statement of the problem. The intent of this section is to demonstrate an understanding of the problem. In many respects, it is one of the most difficult sections to prepare because it should present enough information to demonstrate an appreciation of the subtleties of the problem without going into a prolonged technical analysis. Remember that the proposal is intended to demonstrate how *your company* would go about solving the problem, not your ability to restate the Government's problem. In rare cases, the statement of the problem may justifiably require supporting information, such as a historical background or a summary of the present state of the art. To avoid cluttering up the proposal, it may be well to extract the pertinent facts of such sections and relegate the details to an appendix.

Once the problem has been stated, the proposed approach to the problem should be given. In many respects, this is the heart of the proposal for it is the section that usually receives paramount attention. A well-stated understanding of the problem, the best facilities, the most talented personnel and all of the other advantages that a contractor can offer may well be unimportant if he does not offer a logical and promising approach.

The make-up and organization of the team proposed for the work should be spelled out; and, again, in order to keep the proposal uncluttered, résumés of the team members should be given in an appendix. Some contractors choose the present résumés of many people in addition to those who will be engaged on the program. To the extent that such résumés indicate the attributes of personnel who will make supervisory or tangential contributions to the program, this may be worthwhile. On the other hand, résumés of people who, by their title or position, do not appear even remotely connected with the program could very well be construed as padding.

In some programs, the work proposed may be scheduled in several phases or work units. If so, a section entitled "schedule," in which the work is displayed along the projected period of performance, is desirable. For convenience and clarity's sake, a simple bar graph may prove effective. In many instances, it may be worthwhile to include a section on "specific qualifications." This is a useful means for presenting information on past or concurrent efforts that have specific bearing on the proposed program. In particular, specific contracts in related fields should be mentioned. This section may make reference to facilities or other company experience presented in an appendix.

The body of the proposal should contain a firm contractual statement summarizing the scope of work and offering to do it for a certain sum and within a certain

(Cont. on Page 8)

Microelectronics and the Systems Approach

by

Captain A. J. Stanziano, USN

World War II witnessed the introduction of significant quantities of equipment of considerable sophistication in military aircraft, other vehicles and installations. With the manpower and resources available under the press of war, such equipment could be maintained in a reasonable state of repair.

Following the war, developments were undertaken, particularly in the guided missile and aircraft electronics fields, which were an order of magnitude jump in terms of sophistication and complexity. It was during the test phases of these more sophisticated research and development programs that the plague of non-reliability threatened to become an epidemic. It was a rare occurrence when a flight test was performed in which all subsystems performed without failure.

With the excellent vision of hindsight, it is obvious that these failing systems performed exactly as they should considering individual component reliability and the degree of complexity. In fact, any other behavior would have been a violation of the laws of probability. The recognition by management in the early 1950's that component reliability was a consideration in the success of complex programs was a great step forward, trivial as this statement may sound. It then became *de rigueur* to include some vague statements on reliability in equipment specifications, such as "the system shall be free from recurrent failure." On the industrial side, any contractor had to have a reliability coordinator attached to a reasonably high corporate officer and a staff dubbed Reliability Engineering in order to be in the running. These actions, however, did not contribute much to real user satisfaction with the finished product.

The advent of the application of transistors to military equipment in the mid-1950's gave promise of considerably improved reliability over the use of vacuum tubes. Higher reliability passable components which were then on the market gave added encouragement.

Since the transistor circuitry occupied less space per function, there was immediately, however, a drive toward more complex systems which cancelled to a great extent the reliability improvements. The size and power reduction resulting from the use of transistors was not sufficient to employ redundant circuits for the improvement of reliability. Since the packaging was designed with access for maintenance a secondary consideration, overall system availability did not rise despite the reliability improvements. In part, these undesirable circumstances arose from a lack of definition in the purchase specifications on such items as maintainability, reliability, availability, cost of ownership, etc.

The development and practical availability of the digital microelectronic functional devices hold promise of realizing, on the technical side, desirable equipment characteristics and make reasonable the specification of such characteristics on the managerial side. On the one hand, the microcircuit, because of its manner of construction, has a very high inherent reliability. On the other, its size permits the use of redundancies for functional reliability improvement, better packaging for maintenance and several other *desiderata* for systems use.

The promise tendered by the application of the microcircuit for the solution of numerous equipment problems related to size, weight and reliability was sufficiently great to justify its use in several subsystem developments despite the high device cost at the time. Among these developments were the Sperry Loran-C, the Westinghouse Pathfinder Receiver, and the Naval Air Development Center One-Way Data Link.

Of these three subsystems, the Loran-C is the most sophisticated, and could well serve to illustrate the impact of microelectronics. Numerous comparisons have been made between the Microelectronic Loran-C and other Loran receivers fabricated in the pre-microelectronic era; however, these comparisons have emphasized relative weights, sizes and power required. The aspect which has received less attention is that the Loran-C is a completely new equipment in that it is automatic; no operator is required. If prior construction techniques were used to produce the equivalent of a Loran-C receiver, the comparisons would be impressive indeed. In this equipment we have an example of the application of automation achieved in an economical form together with the other advantages cited as a direct result of the existence of the microcircuit.

With the success achieved in the development of several avionic subsystems employing microelectronic techniques, with the cost reductions of the microelectronic devices themselves and with the experimental indication of vastly improved reliability, consideration was then given to the development of complete integrated avionic suits for classes of aircraft. By integration is meant "essential to completeness," a standard dictionary definition.

The first integrated avionics systems to be considered for development were the Integrated Helicopter Avionics System and the Integrated Light Attack Avionics Systems. The basic design philosophy of these systems concerns the achievement of maximum military effectiveness consistent with cost of purchase, cost of ownership, manpower, maintenance capabilities in terms of test equipment and manpower skills, etc. It is through the use of microcircuits that it is now possible to consider for aircraft the use of a complex digital computing system fed vastly greater amounts of information by sensors and providing outputs to actuators and displays. Such a computation facility takes over, in effect, some of the duties normally assigned to the aircraft crew, such as navigation.

For this function, as in many others, basic data are received from numerous sensors, evaluated, and the most probable processed data presented to the pilot or used to govern some actuator. This sort of process duplicates

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Capt. Stanziano has served in several assignments related to airborne electronics, primarily research, development, test, evaluation and fleet use. Prior to his present assignment, he was Navy Member of the Mutual Weapons Development Team in Paris, France. For his work as U.S. Member of the Steering Committee, NATO Maritime Patrol Aircraft, he was awarded the Medal for Aeronautics by the French Government.

in many features the functions that a man would perform in the absence of the computer. In this regard, the integrated system provides a high degree of automation of the functions of a military aircraft.

In addition, a complex of subsystems organized by a computation facility is a system in the true sense of the word. It is a combination rather than an aggregation of subsystems. The performance, system of effectiveness, or any other overall parameter of such a system can be meaningfully specified by a purchaser in the light of the military requirements. It is more significant, from a systems viewpoint, to specify the altitude band which an aircraft will fly when in the terrain following mode than to have described the details of the radar used in such a system.

From the point of view of the military equipment purchasing manager, the choice of a system depends on the selection of numerous parameters: some military and many non-military much akin to a business establishment. At one extreme of the spectrum, using only operational aspects, a system could be designed which would do the job assuredly but at a price that would not be supportable. At the other extreme, the cost would be small, but the probability of accomplishment of the military objectives nil. In many places between these two extremes there are peaks of military performance per dollar.

The choice of a system depends on this type of analysis but is influenced not only by a few but by a multiplicity of such parameters, including commonality across weapons systems lines which makes the problem one of considerable complexity. At the outset of such an analysis is the research and development cost amortized over the number of systems planned to be purchased which gives a purchase cost per system per unit time.

Now, competing systems must be compared with each other in military effectiveness and cost. Each of these parameters is in itself a complicated subject. Looking at the maintenance cost, there is a cost of spare parts, cost of personnel training, cost of test equipment and cost of personnel. A determination must be made of the relative worth of system self-test and to what depth relative to reliability of equipment, spare parts cost, cost of personnel training, systems availability, shop space on ships, etc.

Where such a determination is made (actually a whole manifold of such determinations must be made), the manner in which the purchase cost is influenced by various values in the manifold must be evaluated. Also, within each such manifold, there are subsidiary manifolds usually connected to other primary ones or there are overlaps of primary manifolds.

For example, reliability was mentioned under maintenance but various levels of reliability can be obtained by various schemes, such as redundancy, at a price. What this is worth relative to cost, availability and its influence on maintenance procedures must be evaluated relative to the whole situation, including the probability of completing a certain military mission. While the problem of system choice is theoretically a solvable problem, it is very complicated with many of the variables bounded and many whose value are only crudely known. As part of the solution, the influence of crudely known parameters must be determined to avoid spurious conclusions.

While the foregoing description of the mechanics of making a choice of system for a given set of avionics applications appears as suitable rationale, there remain several problems between the choice and specification of the system. Assuming a choice of system was made in an appropriate manner, the parameters which formed the basis of the selection are generally not those which an inspector can use for acceptance or rejection of either the system or its parts. Similarly, it is hardly feasible to engage the completed R&D system in a warfare situation upon prototype completion by the contractor to determine whether he has done a suitable job. Therefore, it is necessary to translate the criteria which led to the system choice into engineering measurables. Such measurables can be acted upon by either plant inspectors or by flight test personnel.

(Cont. on Page 13)

U.S. Army Basic Research Information Available

Statistics truly show that the sun never sets on the Army's basic scientific research activities. Individual grants and contracts awarded by the Army Research Office totalled over $612 million for 1964 and represented 242 projects assigned to 161 institutions.

At far corners of the world and in its metropolitan centers a complicated research program essential to the arming and equipping of a modern U.S. Army is carried out in modest laboratories and at giant research complexes, each according to its capacity.

Institutions and organizations desiring information and guidance on obtaining grants or contracts for basic research are invited to address inquiries to the Army Research Office, 3045 Columbia Pike, Arlington, Va. Inquiries relating to research in the Mathematics or Physical Sciences areas should be addressed to the Army Research Office-Durham, Box CM, Duke Station, Durham, N. C.

ASPR Changes

(Cont. from Page 2)

- Promote the defensive strength of our allies, consistent with our political-economic objectives.
- Promote the concept of cooperative logistics and standardization with our allies.
- Offset the unfavorable balance of payments resulting from essential U. S. military deployment abroad.

1951–1962 Experience

During this ten-year period, the U. S. exported to its Allies military materiel and equipment valued at $22 billion. About $20 billion of this total was processed by the U. S. Government as part of the Military Assistance Program (MAP). More specifically, $17 billion of that total was under the provisions of the Grant Aid Program and $3 billion was accounted for by miscellaneous sales.

1961–1972 Forecast.

During this ten-year period, the U. S. desires to at least equal the total volume of military exports of the last 10 years. However, the recent sharp reductions in Grant Aid (MAP) will mean that $15 billion or more must now be derived from sales instead of Grant Aid programs.

General Course of Action.

Attainment of the policy and financial objectives cited above will require a broad base of sales activity by defense industry in support of military exports which heretofore was not an essential requirement because of the high proportion of Grant Aid exports of military end items and their subsequent spares support by the U. S. Military Departments.

With the radical change in the ratio of sales to Grant Aid and the related changes in the character of export marketing in the pre-contract as well as the post-contract phases, both the U. S. Government and the U. S. industry found it necessary to enter into a wide range of new activities which include, but are not limited to, those characterized as "cost of sales" under the ASPR.

Government and industry sales efforts, with the expenditures related thereto, are often complementary in the pre-contract, production and post-delivery stages of the military export business. These factors must be taken into account when pricing the defense articles, accepting purchase orders and negotiating production contracts through Government military assistance sales channels, as set forth in ASPR 6–705.3.

Whenever possible, foreign countries are encouraged to negotiate and purchase directly from U. S. defense industry. However, in some cases foreign governments do not have their own procurement organization in the U. S. and have made U. S. Government procurement assistance a pre-condition to large dollar volume purchase from U. S. industry; in other cases, the countries have asked for such special assistance because they do not have the necessary trained and experienced procurement specialists.

RAdm. Sweeney Appointed Navy Deputy to Air Force F-111 Program Director

RAdm. W. E. Sweeny, USN

Rear Admiral W. E. Sweeney, USN, was appointed by the Defense Department as Navy Deputy to the Air Force F-111 System Program Director, Brigadier General John L. Zoeckler. Admiral Sweeney will have primary responsibility for management of the F-111B, the Navy version of the two-service aircraft. Additionally, he will be the Navy Project Manager of the combined F-111B/Phoenix missile system program.

With the Air Force F-111A program moving into the production stage, the Navy version, the F-111B, remains as previously planned in the research and development stage. The important task of intergration of the F-111B and the Phoenix missile systems is still to be accomplished.

The augmentation will permit greater Air Force concentration on the important development and flight test programs already under way and facilitate production of the F-111A. At the same time, Navy management will be strengthened on the F-111B as it approaches the same important stage in its development.

Admiral Sweeney is a weapons engineering officer with extensive assignments in the area of aircraft design, armaments, electronics and missile tests. His most recent assignment was Deputy Department of Defense Representative in Europe and the Middle East for research, development and production programs for all Services, including NATO production of F-104G aircraft and Sidewinder, Bullpup and Hawk missiles. Earlier technical service included duty in the former Bureau of Aeronautics as Design Officer for World War II fighter aircraft and the first jet fighters produced for the Navy.

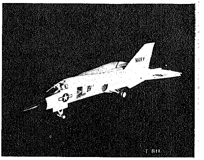
Admiral Sweeney is a graduate of the Naval Academy and has had three years postgraduate education in aeronautical engineering at California Institute of Technology and additional postgraduate education in management from George Washington University and Harvard Business School.

Air Force Awards Contract for Initial F-111 Procurement

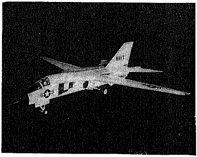
The Department of Defense announced on Ap 12 that the Secretary of the Air Force approv the award of a letter contract to General Dyna ics/Fort Worth covering initial procurement 431 F-111 aircraft. This fixed price incentive f contract covering multi-year procurement is e pected, when definitized, to exceed $1.5 billio Funds totaling $45 million were obligated to in tiate the procurement of 10 aircraft and lon lead time items to be used in 59 additional pr duction aircraft.

Secretary of the Air Force Eugene M. Zucke stated that the results of the research and develo ment program to date give confidence that the F 111 will provide a superior airplane for bot Navy and Air Force missions. The F-111A h flown at supersonic speeds and the wing swee operation has become routine.

U.S. Navy Version of Bi-Service F-111 Jet



F-111B Wings Folded



F-111B Wings Extended

ABOUT PEOPLE

DEPARTMENT OF DEFENSE

Dr. Charles M. Herzfeld, Dep. Dir. of the Advanced Research Projects Agency (ARPA), has been selected to become Director of ARPA, upon the departure of Dr. R. L. Sproull expected about July 1, 1965. Dr. Herzfeld has been Dep. Dir. of ARPA since 1963, having first served in ARPA as Dir. of Ballistic Missile Defense beginning in 1961. Dr. Sproull became Dir. of ARPA in Sept. 1963. He will return to Cornell University, where he had been Dir. of the Materials Science Center from 1960, until his appointment to ARPA.

Dr. Robert A. Frosch, Dir. of Nuclear Test Detection for ARPA since 1963, has been selected to succeed Dr. Herzfeld as Dep. Dir. of ARPA.

Mr. Daniel J. Fink, Asst. Dir. of Defense Research & Engineering for Defensive Systems, has been selected to become Dep. Dir. for Strategic and Defensive Systems, effective May 1, 1965. He replaces **Mr. Fred A. Payne**, who has resigned to return to private industry.

RAdm. Luther C. Heinz, USN, will become Director of Military Assistance in the Office of Asst. Secretary of Defense (International Security Affairs), replacing Lt. Gen. Robert J. Wood, USA. He will report in June and will be advanced to the rank of vice admiral.

The following changes in assignment and retirements of key military personnel of the Defense Supply Agency (DSA) have been announced:

Maj. Gen. Donald L. Hardy, USAF, Commander, Defense Industrial Supply Center, Philadelphia, will retire on May 31. He will be succeeded by Brig. Gen. John M. Kenderdine, USA, currently Executive Dir. of Supply Operations at Hq., DSA.

Maj. Gen. Bruce E. Kendall, USA, now Executive Dir. of Logistics Services, Hq., DSA, will become Executive Dir. of Supply Operations. Gen. Kendall's successor will be announced at a later date.

Maj. Gen. Oliver C. Harvey, USA, Commander, Defense Clothing & Textile Center, Philadelphia, will become Commander of the new Defense Personnel Support Center in that city when it is established in July 1965. This activity will consolidate work now being done by the Defense Clothing & Textile Center, the Defense Medical Supply Center in Brooklyn, N. Y., and the Defense Subsistence Supply Center in Chicago, Ill.

Key staff appointments in the Military Traffic Management & Terminal Service (MTMTS), activated on Feb. 15, have been announced. They are:

RAdm. Emory D. Stanley, Jr., SC, USN, Dep. Commander for Operations; Col. Edward A. Guilbert, USAF, Acting Dep. Commander for Administration; Col. Richard K. Hutsen, USA, Chief of Staff; Col. Paul P. Dailey, USA, Comptroller; Mr. Roland L. Guyotte, Jr., Dir., Office of Programs, Management & Systems; Col. Harry C. Archer, USA, Dir. of Military Plans; Col. Ronald D. Bagley, USAF, Dir. of Freight Traffic; Capt. Stanley B. Freeborn, Jr., USN, Dir. of Passenger Traffic; Col. James E. Branigin, USA, Dir. of Household Goods; and Col. Ransome T. Looper, USA, Dir. of Terminals & Installations.

In addition to national headquarters in Washington, D. C., MTMTS has three Area Commands. Brig. Gen. Austin J. Montgomery, USA, is Commander, Eastern Area, MTMTS, Brooklyn Army Terminal, Brooklyn, N. Y. 11256. Capt. Grover F. Blankinship, Jr., SC, USN, is Commander, Central Area, MTMTS, St. Louis, Mo., 63177. Brig. Gen. Raymond C. Conroy, USA, is Commander, Western Area, MTMTS, Oakland Army Terminal, Oakland, Calif., 94626.

Col. Robert V. Herbold, USAF, has been assigned as Comptroller, Defense General Supply Center, DSA, at Richmond, Va.

Col. Benjamin Widmann, USAF, has been assigned to the Defense Communications Agency as Chief, Data Processing Div.

ARMY

Lt. Gen. Ben Harrell, presently serving as the Asst. Chief of Staff for Force Development, has been named to succeed Lt. Gen. Dwight E. Beach as Commanding General, U. S. Army Combat Developments Command. Gen. Beach will become Commanding General, Eighth United States Army; Commander, United States Forces, Korea; and Commander-in-Chief, United Nations Command.

Lt. Gen. Theodore J. Conway, Dep. Commanding General, Eighth U. S. Army, Korea, has been appointed Asst. Chief of Staff for Force Development to replace Lt. Gen. Harrell.

Brig. Gen. John C. Dalrymple, currently Div. Engineer for the U. S. Army Engineer Div., North Atlantic, will become Dir. of Military Construction in the Office of the Army Chief of Engineers, effective July 1, 1965. He will succeed Maj. Gen. Frederick J. Clarke, who has been named the Commanding General, U. S. Army Engineer Center and Commandant, U. S. Army Engineer School. Col. A. P. Rollins, Jr., the Dep. Dir. of Military Construction, will assume additional duty as Special Asst. to the Chief of Engineers for NASA Support, effective June 1, 1965.

Brig. Gen. Roger M. Lilly has been assigned as Commanding General, Command Control Information Systems (CCIS) Group, U. S. Army Combat Developments Command.

The Army Materiel Command has announced the appointment of the following project managers:

Col. H. F. Foster, Jr., Project Manager for the European Tropospheric Scatter System—Army (ETA). Col. Foster, who is stationed at Ft. Monmoth, N. J., is also Project Manager for UNICOM/STARCOM.

Col. John E. Schremp, Project Manager, of the newly established project office for Night Vision, located at the Engineers R&D Laboratories, Ft. Belvoir, Va.

Col. James H. Schofield, Jr., former AMC AN/VRC-12 and AN/PRC-25 Project Manager, has been redesignated Selected Tactical Radios Project Manager. In addition to the VRC-12 and PRC-25, Col. Schofield assumes responsibility for the AN/RCS-106, -108, -122 and -142, and the AN/VSC-2 and -3. The project office is located at Ft. Monmouth, N. J.

NAVY

RAdm. Richard R. Pratt, Commander, Amphibious Group THREE, will relieve RAdm. Robert H. Weeks as Director, Communications & Electronics, Joint Staff, Commander in Chief Europe, in July. Admiral Weeks is being assigned to Washington as Asst. Chief of Naval Operations for Communications, replacing RAdm. Bernard F. Roeder.

RAdm. George W. Pressey, Commander, Amphibious Group TWO, has been ordered to Pearl Harbor as relief for RAdm. Luther C. Heinz as Asst. Chief of Staff, Foreign Military Aide, Logistics & Administration, on the staff of the Commander in Chief Pacific. Admiral Heinz will become Director of Military Assistance in the Office of the Secretary of Defense in June.

AIR FORCE

The following general officer nominations have been announced by the USAF:

To be major general: Brig. Gen. Gilbert L. Pritchard, Commander, USAF Special Air Warfare Center; Brig. Gen. Robert R. Rowland, Chief, Air Section, MAAG Vietnam; Brig. Gen. Otto J. Glasser, Vice Commander, Electronic Systems Div.; Brig. Gen. Emmett M. Tally, Jr., Dir. of Supply, Air Force Logistics Command; Brig. Gen. David M. Jones, Dep. Associate Administrator for Manned Space Flight, NASA; Brig. Gen. Harry J. Sands, Jr., Commander, Ballistics Systems Div.; and Brig. Gen. John L. Zoeckler, System Program Dir., F-111, Aeronautical Systems Div.

To be brigadier general: Col. Wm. L. Hamrick, Dep. Commander, San Bernardino Air Materiel Area; Col. Alvan N. Moore, Dep. Dir. of Forces, Dir. of Aerospace Programs, DCS/Programs & Requirements, Hq., USAF; Col. Guy H. Goddard, Civil Engineer, Air Force Logistics Command; Col. Clifford J. Kronauer, Jr., Asst. Dir. for Ranges & Space Ground Support, Office, Director of Defense Research & Engineering; Col. George

(Cont. on Page 23)

Guidelines for Unsolicited Proposals

(Cont. from Page 8)

time. A detailed cost breakdown can be relegated to an appendix.

Beyond the body of the proposal come the various appendices referred to in the proposal. Even if having only general reference in the body of the proposal, any information or photographs that will demonstrate ability to undertake the work should be presented.

Basis for Evaluation by the Army.

DOD procurement practices are governed by the Armed Services Procurement Regulation (ASPR) and the basic rules for evaluating R&D proposals are spelled out in this regulation. The item of primary importance is the *technical superiority of the proposal.* All the résumés, annual reports, leather-bound covers and three-color overlays in a proposal cannot be expected to sway the evaluator's opinion of the technical presentation. The submitter *must* demonstrate (1) that he understands the problem fully and (2) that he has a well thought out approach which shows signs of promise if executed as described.

On many occasions, proposals have been rejected as a result of submitters underrating the importance of technical superiority of a proposal. In any proposal, revolutionary ideas that offer the possibility of significant scientific breakthroughs are attractive. However, even old, well-established approaches have won contracts. This is particularly true where the reasons for previous failure of these approaches are analyzed, adequately investigated and a new and promising solution proposed.

A clear understanding of the ultimate needs of the Government agency for whom the work is proposed will also assist in proposing attractive approaches. Often before preparing a proposal it may be helpful to discuss the matter with representatives of the agency concerned. If a proposal involves the development of a material that will be used in large quantities, then what will be the effect of an approach based on material in very short supply? In many instances, the availability of material may have a decided effect on a given approach. Similarly, if a submitter has done his homework properly, he may find that the agency itself has done some work on the approach the submitter has in mind, and may have some very definite ideas about it.

A technical evaluation of a proposal may sometimes be performed on the basis of the technical portion of the proposal alone. Cost information will be deliberately denied to the technical evaluator to prevent this from influencing his decision. He is asked to rate a proposal into two broad classes, acceptable and unacceptable. He is then required to state reasons for unacceptability and/or acceptability. Only then may cost data be brought into the picture. On the other hand, a proposal may be evaluated taking into consideration both technical and cost factors at the same time. Upon completion of the evaluation, the submitter will be informed as to whether the Government is interested in supporting his proposal, or his proposal will be rejected. Sometimes the technical results of the evaluation will be provided; other times only a statement of "no interest" or "lack of potential benefit to our R&D programs" may constitute the rejection. In any event, the length of the reply does not constitute the measure of the evaluation. *Every* proposal is carefully and thoroughly evaluated by highly competent personnel in the field or fields involved in the proposal.

Where to Submit a Proposal in the Army.

Proposals should be submitted, in triplicate, to the appropriate major subordinate command or agency of the Army Materiel Command (AMC) concerned with the work proposed; or, if this cannot be readily determined, to:

Commanding General
U. S. Army Materiel Command
Attn: AMCRD-SS-P
Washington, D. C. 20315

AMC has seven separate major subordinate command They are:

U. S. Army Electronics Command
Ft. Monmouth, N. J.

U. S. Army Missile Command
Huntsville, Ala.

U. S. Army Mobility Command
Warren, Mich.

U. S. Army Munitions Command
Dover, N. J.

U. S. Army Supply & Maintenance Command
Washington, D. C.

U. S. Army Test & Evaluation Command
Aberdeen, Md.

U. S. Army Weapons Command
Rock Island, Ill.

Each of these commands has numerous sub-command laboratories, installations and activities under its juri diction.

Then there are the separate activities and laboratori reporting directly to AMC headquarters:

Army Ballistics Research Laboratory
Aberdeen, Md.

Army Materials Research Agency
Watertown, Mass.

Armed Forces Food & Container Institute
Chicago, Ill.

Coating & Chemical Laboratories
Aberdeen, Md.

Cold Region Research & Engineering
Hanover, N. H.

Harry Diamond Laboratories
Washington, D. C.

Human Engineering Laboratory
Aberdeen, Md.

Natick Laboratories
Natick, Mass.

Satellite Communications Agency
Ft. Monmouth, N. J.

Nuclear Defense Laboratory
Edgewood, Md.

The names of the major commands and separate activ ties are synonymous with the commodity or function f which they are responsible with the exception of t following:

- Mobility Command—Responsible for aeronautical a aerial delivery equipment, surface transportation, pow generation, construction, surface barrier and bridgin general purpose vehicles and general support equipme and supplies.

- Harry Diamond Laboratories—Responsible for bas and applied research in the fields of radiating or influen fuzing, time fuzing (electrical, electronic, decay, or fluid and selected command fuzing for target detection, sign ture analysis and the target intercept phase of termin guidance.

- Natick Laboratories—Responsible for research a development in the physical, biological and earth science and engineering to meet military requirements in the co modity areas of textiles, clothing, body armor, footwea organic materials, insecticides, fungicides, subsistence, co tainers, POL handling and dispensing equipment, mate als handling equipment, food services equipment, field su port equipment, tentage and equipage and air delive equipment.

MEETINGS AND SYMPOSIA

MAY 1965

Technical Information Symposium, May 26-27, at Statler-Hilton Hotel, Los Angeles, Calif. Co-sponsors: DOD and National Security Industrial Assn. The objective of the conference is to make top management aware of what is involved in technical information, the efforts under way by DOD to solve existing problems and the need for dynamic leadership in the management of technical data and information. Contact: National Security Industrial Assn., 1030 15th St. NW, Washington, D. C. 20005, telephone (Area Code 202) 296-2266.

JUNE & JULY 1965

Research & Development Cost Seminar in Chicago, June 2-4; New York, June 8-10; San Francisco, June 14-16; Los Angeles, June 16-18; and Boston, June 29-July 1. Sponsor and contact: The National Defense Education Institute, 11 Arlington St., Boston, Mass. 02116, telephone (Area Code 617) 267-5132. The seminar is designed to afford participants the opportunity for intensive scrutiny of a broad spectrum—today's R&D "cost context"—and of the key areas within it—cost/effectiveness analysis, cost estimating, cost tracking.

Advanced Incentive Contracting Seminars in Washington, D. C., June 15-17; Los Angeles, June 21-23; Denver, June 24-26; Cleveland, June 29-30-July 1; and Boston, July 7-9. Sponsor and contact: The National Defense Education Institute, 11 Arlington St., Boston, Mass. 02116, telephone: (Area Code 617) 267-5132. The two-day seminars (preceded by one-day optional briefing) are designed to demonstrate—practically and clearly—the latest advances in incentive techniques.

Conference on Small-Angle X-Ray Scattering, June 24-27, at Syracuse University, Syracuse, N. Y. Sponsors: Department of the Army, Syracuse University Research Institute. Contact: Maj. Lawrence P. Monahan, Jr., U. S. Army Research Office—Durham, Box CM, Duke Station, Durham, N. C. 27706, telephone (Area Code 919) 286-2285.

Relaxation Techniques in Chemical Kinetics, June 28-30, at State University of New York, Buffalo, N. Y. Sponsors: Air Force Office of Scientific Research, American Chemical Society and State University of New York. Contact: Dr. Ralph G. Wilkins, Department of Chemistry, State University of New York, Buffalo, N. Y., telephone (Area Code 716) 831-3905.

Second Interdisciplinary Conference on Electromagnetic Scattering (ICES-II), June 28-30, at Amherst, Mass. Sponsor: Air Force Cambridge Research Laboratory, L. C. Hanscom Field, Bedford, Mass., telephone (Area Code 617) CR 4-6100, Ext. 3633.

Civil Defense

Defense Industry Obligation

Defense industry has a special obligation to prepare for the survival of its facilities, its forces and its production capabilities, Director of Civil Defense William P. Durkee, Office of the Secretary of the Army, points out.

Mr. Durkee emphasizes the fact that survival preparations must always be made locally—at the plant and in the community. Executives in defense industry must take the initiative and carry the basic responsibility for ensuring their own survival and that of their employees in case of an attack on the United States. Government can and will provide guidance and technical assistance, but the management of industrial facilities must in the final analysis make its own plans and preparations according to its own particular requirements.

Defense industry should address itself, first of all, to the basic matter of preparing shelters for its employees. In particular:

- Cooperation should be given to the local government in the Fallout Shelter Survey, Marking and Stocking Program. All buildings should be surveyed and have their protection factors assessed by the architects and engineers under contract with the Army Corps of Engineers or the Navy Bureau of Yards and Docks. If the buildings meet Federal criteria and are needed for public shelter, the Federal Government will mark and stock such shelters at no cost to the owner.

- To the extent possible, agreements should be made with local and Federal Government agencies to allow public use of shelter space that meets Federal protectión criteria when needed. This requires signing of the "Fallout Shelter License or Privilege" Form.

- If it is discovered, either through the Government survey or an independent one, that a company's building does not offer adequate fallout protection, arrangements should be made to improve them by making minor improvements to upgrade shelter space or increase the number of people they can accommodate. The local civil defense director can provide information regarding architects and engineers who are qualified in fallout shelter analysis.

- Fallout shelters should be included in the design of all new plants and structures. The local civil defense director can arrange to secure technical assistance for incorporating protective features into the design of new buildings at little or no additional cost.

- Employees should be urged to arrange to protect themselves and their families if an attack should come at night or on a holiday when they are not at the workplace—either by preparing home shelters or by assuring that they and their families know the location of community shelters in their respective neighborhoods. Industry can make a great contribution to the national shelter program by providing its employees with guidance and assistance in preparing and stocking home or community shelters.

CALENDAR OF EVENTS

June 5: Capabilities of Army Aircraft Demonstration, Ft. Sill, Okla.

June 6: Anniversary of Army Aviation.

June 7-11: National Strategy Seminar, Carlisle Barracks, Pa.

June 7-13: NATO Conference SHAPEX 1965, Paris, France.

June 10-16: Global Strategy Seminar, Norfolk, Va.

June 13-17: Ocean Science & Ocean Engineering Conference & Exhibit, Washington Hilton Hotel, Washington, D. C.

June 14: 190th Birthday of U. S. Army.

June 14-16: American Marketing Assn. Conference, New York, N.Y.

June 14-18: American Institute of Architects Convention, Washington, D.C.

June 14-July 2: Defense Strategy Seminar, Ft. McNair, Washington, D.C.

June 15-17: Sheet Metal & Air Conditioners Contractors Conference, Philadelphia, Pa.

June 16-18: Aviation Distributers & Manufacturers Association Conference, Colorado Springs, Colo.

June 16-19: Society of Nuclear Medicine Convention, Miami Beach, Fla.

June 20-26: Comunications Workers of America Convention, Kansas City, Mo.

June 21-23: The Institute of Navigation Annual National Meeting, Edgewater Inn Marina Hotel, Long Beach, Calif.

June 21-25: American Newspaper Publishers Convention, Chicago, Ill.

June 21-25: International Co cil of Industrial Editors C ference, San Francisco, Ca

June 22-26: National Pre Photographers Conferen Houston, Tex.

June 26-29: Advertising Fed ation of America Conferen Boston, Mass.

June 28-30: Association of I & Steel Engineers Conf ence, Salt Lake City, Utah

June 29-July 2: Data Proce ing Management Associat Convention, Philadelphia,

NOTICE

Due to the gratifying response of industry in requesting copies of the *Defense Industry Bulletin*, we are having difficulty keeping up with our distribution. If your company is one of several thousand which has requested the *Bulletin* during the past three months and has just started to receive copies, we thank you for bearing with us. We are honoring all requests as rapidly as possible.

Additionally, if your company would like to see some area of Department of Defense policy or activity covered in the *Bulletin*, please let us know. We welcome your suggestions.

The Editors.

DSA Regulation Covers Production Testing

The Defense Supply Agency is giving increased attent to production testing in order to assure that the products of search and development procured by the Agency meet all desi configuration, quality and reliability requirements, and that tl are procured at the lowest sound competitive cost. This can b be achieved when the item to be procured is adequately descril by a specification which has been fully production tested to mi mize production costs, eliminate "gold plating" and encourage widest possible industry participation.

DSA Regulation 4125.1, "Production Testing of DSA Manag Items," covers the production testing of clothing, textile and s sistence items. The regulation provides that clothing, textile, s sistence and medical items which have been newly developed, which have undergone a major change, will be tested for produ bility. For all other items assigned to DSA Centers for supply ma agement, the regulation allows for testing only at the request the Military Services.

The Procurement and Production Directorate in the cogniza Supply Center is responsible for monitoring production tests a coordinating with other Directorates and the Military Services assure:

- That restrictive production elements are eliminated from spe fications.
- That standard commercial production practices are follow insofar as practicable, to enhance competition.
- That the item can be manufactured in economic producti quantities.
- That the specification is analyzed for value under the va engineering/analysis program.
- That the quality assurance provisions are compatible w normal industrial practices and provide for an item of specif quality, efficiently and economically.
- That a broad industrial base for current procurement and dustrial mobilization planning is provided.

SPEAKERS CALENDAR

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JUNE 1965

OFFICE OF THE SECRETARY OF DEFENSE

Hon. John T. McNaughton, Asst. Secretary of Defense (International Security Affairs), at National Interdepartmental Seminar, Foreign Service Institute, Arlington, Va., May 25.

Maj. Gen. William J. Ely, USA, Dep. Dir. of Research & Engineering (Administration & Management), at National Security Industrial Assn. meeting, Los Angeles, Calif., May 26.

Maj. Gen. W. S. Steele, USAF, Dep. Commandant, Industrial College of the Armed Forces, at Northern Oklahoma Junior College Commencement, Tonkawa, Okla., May 30.

Dr. Shirley Fisk, Dep. Asst. Secretary of Defense (Health & Medical), Office of Asst. Secretary of Defense (Manpower), at SHAPE Medical Conference, Paris, France, May 31-June 2.

Gen. E. G. Wheeler, Chairman, Joint Chiefs of Staff, at Air War College, Maxwell AFB., June 2.

ARMY

Mr. William P. Durkee, Dir. of Civil Defense, at National Fire Protection Assn. Annual Meeting, Washington, D.C., May 21.

Lt. Gen. L. J. Lincoln, Dep. Chief of Staff for Logistics, at DOD/Logistics/R&D Conference, Warrenton, Va., May 26 (Appearance only).

Gen. Harold K. Johnson, Chief of Staff, USA, at Military Government Assn. Convention, Portland, Ore., May 29.

Brig. Gen. Harry G. Woodbury, Dep. Dir. for Comprehensive Planning, Office of Dir. of Civil Works, at Carnegie Institute of Technology ROTC Commissioning, Pittsburgh, Pa., June 7.

Maj. Gen. William R. Peers, Asst. Dep. Chief of Staff for Military Operations, at Civil Affairs Convention, New York, N.Y., June 12-13.

NAVY

RAdm. H. L. Miller, Commander Carrier Div. Three, at Naval Air Station, Lemoore, Calif., May 25.

RAdm. C. B. Jones, Chief, Office of Legislative Affairs, at Assn. of the U. S. Army Southern Colorado Chapter Meeting, Pueblo, Colo., June 7.

Hon. Paul H. Nitze, Secretary of the Navy, at Naval War College, Newport, R. I., June 10.

Hon. R. W. Morse, Asst. Secretary of the Navy (Research & Development), at Marine Technology Society & The Society of Limnology & Oceanography Meeting, Washington, D. C., June 14; at 4th Biennial Navy Tripartite Symposium, Annapolis, Md., June 23.

AIR FORCE

Gen. B. A. Schriever, Commander, Air Force Systems Command, at USAF Academy, Colo., June 7.

Gen. J. P. McConnell, Chief of Staff, USAF, at Honor Squadron Dinner, USAF Academy, Colo., June 5; at University of Akron, Akron, Ohio, June 7; at USAF Academy Graduation, June 8-9.

Lt. Gen. W. A. Davis, Vice Commander, Air Force Systems Command, at Massachusetts Institute of Technology, Cambridge, Mass., June 10.

Hon. Leonard Marks, Jr., Asst. Secretary of the Air Force (Financial Management), at Blair Academy, Blairstown, N. J., June 5; at Stanford University, Palo Alto, Calif., June 12.

Brig. Gen. E. A. Pinson, Dep. Commander, Office of Aerospace Research, at Aerospace Research Laboratories Symposium, Wright-Patterson AFB, Ohio, June 14.

Maj. Gen. B. I. Funk, Commander, Space Systems Div., AFSC, at American Institute of Aeronautics & Astronautics Meeting, Colorado Springs, Colo., June 17.

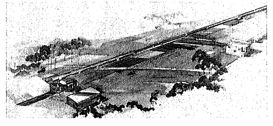
DASA Conical Shock Tube Facility Contract Awarded

A defense contract for $2,300,000 has been awarded to Sun Shipbuilding Co., Chester, Pa., for construction of a conical shock tube air blast simulator. Sponsored and funded by the Defense Atomic Support Agency (DASA), the DASA Conical Shock Tube Facility (short title, DASACON) will be located on the grounds of the Naval Weapons Laboratory, Dahlgren, Va. It is believed to be the largest facility of its kind in existence.

DASACON will measure nearly one half mile in length, tapering from 16 inches to 24 feet in internal diameter along its conical shape. When completed, it will enable DOD scientists to study the air blast effects of a simulated 20-kiloton nuclear blast using a 1000-pound conventional high explosive charge.

Of particular interest to DASA scientists is a "high altitude" blast simulation capability. A diaphragm sealing off the conical tube at one of the test stations allows evacuation of air to a partial vacuum simulating altitudes of about 100,000 feet. Measurement of blast effects at this simulated altitude can provide answers to some questions which otherwise would require expensive and highly complex underground test preparations.

Military construction, expected to be completed in October 1966, is under supervision of the Navy's Bureau of Yards and Docks. Projects developed for the facility will be conducted under the technical management of the Bureau of Ships, subject to final approval of DASA.



Artist's Concept of the DASA Conical Shock Tube Facility

Commodity Managers:
Their Role in the Army's Supply System

by

Brigadier General Donald G. Grothaus, USA

The world's largest supply business is directed by the U.S. Army Supply and Maintenance Command's (SMC) Supply Directorate. The enormity of its day-to-day operations in inventory control and warehousing becomes apparent only when one realizes that the yearly transactions of the Supply Directorate dwarf the annual combined mail-order business of Sears Roebuck and Montgomery Ward.

The Commodity Managers are the men who make this gigantic system work. The Army has 2,700 of these experts; they are the vital links in the vast logistical operations of the entire Army. Their decisions control a large share of the Government's investment in materiel, both of major items like a tank "shell" and secondary items like the tank engine, tracks, et al.

The variety of secondary items or repair parts handled, for which SMC is responsive, is impressive. For Army aircraft, for example, they vary from engines for helicopters and fixed-wing aircraft to the smallest component, like a transistor, that also plays a vital role "keeping the planes flying."

The Commodity Manager has to have extensive knowledge of some 675,000 separate items of the Army worth $1.8 billion. These repair parts range from tank engines to watch springs. To take just one portion of this program, sales of Army-managed repair parts to friendly nations under the Mutual Security Program have totalled some $161 million for fiscal 1965.

The Commodity Manager's job is to determine the equipment and repair parts required to maintain the peace or insure victory in war. He meets many challenges. He has to be not only a "generalist" who has a solid understanding of complex military systems and equipments, but also a specialist on costly repair parts. For example, the Commodity Managers assigned to the Army Missile Command are responsible for management of missile repair parts. Each Commodity Manager must have extensive knowledge of the complete missile system and its contribution to the "big picture." And, of course, it's often the smaller component parts that give the Commodity Manager their biggest headaches because there are so many of them.

Because of concern about gaining increased recognition and motivation for Commodity Managers, the SMC is inaugurating a career-management program expressly for their training and subsequent government careers. This offers all those interested in the supply end of the logistics business unique opportunities. For example, the career-management status provides schooling and unusually rapid promotional opportunities as a part of the program. Thirty men a year will be selected to train in this newly proposed program.

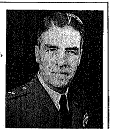
The men we are interested in must have a number of executive qualities that show real management potential. Good judgment is a quality that must rank at the top of the list. The Commodity Manager must possess the ability to correctly evaluate mountains of information, to be alert to changing developments—like international events over which he has no control, to be tactful in dealing with other people and to have outstanding ability in communicating with others. Educational attainment, in itself, is not enough. While a college education or its equivalent is required, we are more interested in the trainees possessing the above qualities and offering a solid long-range potential of real management value.

Another vital quality that we look for is flexibility. The Commodity Manager has to deal with many groups of specialists: two important customers other than the Army itself—the Air Force and the Navy—as well as many groups of specialists, like maintenance experts, engineers, procurement people, depot maintenance people and contractor personnel. The Commodity Manager's flexibility is given a severe test because he has to deal with the logistics problems of all three services on a world-wide basis. These demands are constantly changing, in ways that present a real challenge to the Commodity Manager's ability to anticipate a wide variety of political as well as economic factors. One Commodity Manager puts it this way: "You have to be 'loose in the saddle' on this job. You also have to have the ability to work under a lot of pressure."

While these managers do no procurement on their own, the procurement officers use their recommendations in their ultimate decisions. Decisions like these sometimes puts the Commodity Managers right "in the middle" of things. They do not want to overstock, yet they must above all see to it that the troops in the field are fully equipped. This calls for an adroit judgment. What with the varying demands made upon the Army by changing world-wide factors—some of which are virtually impossible to foresee—their jobs present a continuing challenge.

An exacting selection process, including the Federal Service Entrance Examination, determines the 30 trainees who will train as Commodity Managers each year. Then follows a period of intensive training, including on-the-job and scholastic training, that provides the successful candidates an opportunity for a grade increase each year. Thus the successful trainees who first started as a General Schedule (GS) 5 will progress to GS 7—a 20 per cent salary increase in only three years. Then the trainee has the opportunity to attain GS 8, just as long as he continues to progress and show initiative.

The intermediate training stage for Commodity Managers of GS 9–11 follows, and extends his training to include courses in a variety of human-relations and work skills. Then comes the senior level of GS 12–14 positions, when the regular job is implemented by courses in the technology of administration. The top executive level is reached with GS 15 and up ($16,460 a year up), when top-level management courses equivalent to those of university graduate schools of business administration are offered the Commodity Managers. When they have reached



Brig. Gen. D. G. Grothaus, USA
Director of Supply
U.S. Army
Supply and Maintenance Command

this level, they are really big-time executives in the broadest sense of that term.

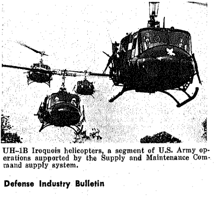
Now for a few examples that will convey the scope of the operations of the Commodity Manager. The dollar value of the repair parts they provide for the maintenance of U.S. forces world-wide amounts to $519 million in fiscal 1965 (on a projected basis). When this is added to the total sales of Army-managed repair parts to friendly nations, the volume of Uncle Sam's dollar involved aggregates $680 million a year. To obtain the necessary materiel to support this large sales program, the Commodity Managers initiate procurement actions that have already amounted to $600 million this fiscal year.

Within the Army aviation commodity area, for example, some $401 million of repair parts is included in inventory on hand. Estimated issues for this fiscal year will total about $315 million. Furthermore, an estimated $157 million is planned for procurement—an area in which the Commodity Manager plays an influential role. In addition, these Commodity Managers service major and repair parts operations for more than 4,000 helicopters and some 3,000 airplanes. These aircraft can, of course, function only as efficiently as they are supported with major assemblies and with repair parts.

In computing his various requirements, the Commodity Manager must be constantly analyzing the overall picture, and must instinctively know how to work with certain basic facts about SMC's operational areas. For example, he must know that, of the 24 depots commanded by SMC, there is a total of 03 million square feet of open storage space. He must know these and a host of other facts, so that he can make the proper recommendation for storage of the numerous repair parts provided by SMC.

For another illustration, let us take the M-60 medium tank. The Commodity Managers for this tank must know a host of facts. They must know the original cost of this tank. The Commodity Manager for the repair parts must be familiar with several thousand such items. He must be familiar with the cost of the original engine, transmission, rangefinder, track and road wheels, telescope and the countless other repair parts that make up the tank. When the original cost of the repair is totalled, that total makes up most of the original cost. Then, when the repair parts have to be reprocured several years after the tank was originally assembled, their costs have skyrocketed because retooling has to be initiated all over again for production.

The Commodity Managers, then, are the key men who make the Army's entire supply system work. They are men who directly affect the readiness posture of our military forces world-wide. They plan a determining role in the Department of Defense's huge investment in materiel. The Commodity Managers for the Army are handling their responsibilities in a highly commendable manner. The Army owes its Commodity Managers the very highest praise.



UH-1B Iroquois helicopters, a segment of U.S. Army operations supported by the Supply and Maintenance Command supply system.

Systems Command Assumes Atlas Missile Command Responsibility

The phase out of the Atlas weapon system from the Strategic Air Command's (SAC) operational inventory has resulted in the Air Force Systems Command (AFSC) assuming responsibility for checkout and launch of Atlas missiles at Vandenberg AFB, Calif. All future Atlas launches into the Air Force Western Test Range in support of the U. S. Army Nike anti-missile program and the U. S. Air Force Advanced Ballistic Re-entry Systems (ABRES) program will be conducted by the AFSC's 6595th Aerospace Test Wing.

The change, which became effective on March 22, 1965, involves some 500 missile technicians and launch crew members from the SAC squadron who were transferred to the Aerospace Test Wing. Also transferred were three gantries, Atlas launch pads, three above-ground coffin-type Atlas sites, an Atlas D Radio Guidance Station, a missile assembly and maintenance shop and other technical facilities. Three of the launch pads, originally used for the Atlas D, will be modified to launch Atlas E and F models as well.

Many of the ICBM's used in the specialized programs will be those being removed from SAC operational bases. Their use in the specialized programs will be part of an Air Force plan to realize maximum value from ICBM's slated for phase out from the deterrent force.

The new ABRES and Nike Target vehicle launch team will be under the direction of Colonel Robert C. Thompson, the 6595th's Deputy for Ballistic Systems, and Lieutenant Colonel Phillip R. Safford, chief of the Atlas Project Office.

Microelectronics

(Cont. from Page 5)

Measurements of this kind should form a part of the specification for the system and, indeed, can be used during all phases of development to determine the progress of the system project. If the contract includes penalties and incentives, these measurements should form a part of the plan. Most of the measurables and their influence will generally be contained in the analysis which led to the system choice. The selection of a reasonable number of proper measurables requires an insight into the systems engineering and military use of the system.

The successful harnessing of the microcircuit technology to avionic equipment, as exemplified in the Sperry Loran-C, opened the road to truly integrated systems design. The small size and low cost circuitry make feasible complex equipment. High inherent reliability and higher system reliability by use of redundancy make complex systems attractive. It is now possible to design for ease of maintenance by personnel of little training. The systems designs now contemplated are complex to the point where, if a failure does occur, the degradation is graceful. In short, the microcircuit has raised the systems complexity to a new plane with a potentially higher effectivity.

A complex system brings forth system problems which were not previously prominent and which are germane to systems selection. These problems, in turn, make potent the need for more purely objective criteria for acceptance or rejection of the finished product. Modernized treatment of the design of systems demands that recognition be given to such factors from the very beginning in order to insure the broadest base of commonality and its related and overriding factor of true weapons systems cost effectiveness, both service and inter-service wide.

Project Manager

(Cont. from Page 2)

- His task is finite in duration; after the project is completed the personnel directly supporting it can be assigned to other activities.
- The project manager manages a higher proportion of professional personnel; consequently, he must use different management techniques than would be found in the more simple superior-subordinate relationship. The work situation for the individuals involved in the project is fluid; the project can be cancelled and more opportunity exists for the individual employee to feel uncomfortable and insecure than would be found in a more stable functional work situation. The project manager's attitude regarding the functions of management (planning, organizing, directing and controlling) must be augmented by increased factors of motivation, persuasion and human relations since he must have the support of people that many times are paid and promoted by someone in the functional element.
- The project manager has no *line* authority per se but rather depends on other manifestations of authority to bring about the attainment of the objective. The directing function is of somewhat less importance since the directing he does is, for the most part, accomplished through the functional managers who support him in the project endeavor.

The project manager provides a unifying force; without such a force two alternatives are suggested: (1) the project activities remain functionally separated with the risk of lack of unanimity of objective or, (2) the senior executive of the organization performs the project integration. Neither choice is acceptable since by nature functional managers are provincial (as would be expected) and the senior executive is concerned with overall support of all projects as well as the responsibility of long-range planning in terms of future products, finances, facilities, etc.

Authority and Responsibility of the Project Manager.

Authority is the legal or rightful right to command, to act, or to direct. Authority is *de jure* in the sense that it exists by rightful title, i.e., specific delegations of the authority of an organizational position are contained in the unit's documentation such as in policy and procedural instruments, job descriptions and organizational charters.[3] Additional authority, *de facto* in nature, is exercised by a manager and is of an implied nature. Implied authority is the intrinsic and necessary power to discharge fully the responsibilities inherent in the task or job. Thus, an organization receiving public funds has *de facto* authority to create administrative policy stipulating how the funds will be maintained, obligated and safeguarded. Other aspects of *de facto* authority include the project manager's persuasive ability, his rapport with extra-organizational units and his capability in resolving opposing viewpoints with the parent unit and between the external organizations.

The senior executive of the organization still retains organic authority, responsibility and accountability for the results produced by the organization. The line executives share their authority with the project manager with respect to the project under development or production; it is debatable whether the authority that the project manager exercises is *line* authority per se since his authority extends horizontally and vertically in the parent organization and radiates outside to participating organizations.[4] A new concept of authority emerges with the advent of the project manager, viz., *Project Authority* which appears as the nearest thing to line authority that can be delegated to the project manager within the restraints of contemporary organizational theory. Project management changes the authority relationship since a line functional manager (such as a production manager) is now required to provide advice, counsel and specialized support to the project manager, who is concerned with project integration. Thus one sees beginning evidence of departure from the line-staff organizational dichotomy that has been in the mainstream of management theory for decades. Project authority provides the legal basis for the unification of organizational deliberations both within the organization itself and with respect to outside organizations. Traditional authority tended, for the most part, to be operable only within the parent organization.

Additional factors that lend credence to the *project authority* doctrine include:

- Influence in the rank, organizational position or specialized knowledge of the incumbent. The project manager has superior knowledge of the relative roles and functions of the individual parts of the project, thus placing him in a logical position to exercise a heavy hand in major organizational decisions affecting the outcome of his project. His knowledge (by virtue of being in a focal position) inherently gives him knowledge superior to that of the personnel responsible for any subsystem or subactivity functioning as part of the integrated whole.
- The priority and obligation existing within the organization for the timely and efficient attainment of the project objectives.
- The existence of a bilateral agreement with a contracting party for the completion of the project within defined parameters (cost, performance, schedule and technology).
- Integrative requirements of the project manager's position in the sense that he has the singular responsibility within the organization to coalesce and direct separate functional and extra-organizational activities to a coordinated goal.
- The project manager's authority and responsibility flow horizontally across the vertical superior/subordinate relationships existing within the functional organizational elements.
- Explicit delineation in the organizational policy instruments is required to enable his active participation in the major managerial and technical activities involved in the project.[5]

Management literature has neglected any real definition or discussion of the authority of the project manager, probably because of the near universality of the functional approach to management education and practice. Until contemporary management theory has fully accepted the project manager's role, extraordinary manifestations of authority will be required. Creation of the position of project manager requires careful planning; certain criteria are offered for stipulating the authority relationships:

(Cont. on Page 24)

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[3] *Within the Air Force, specific and forceful authority has been delegated to the project manager (The System Program Director) in AFR 375–3, dated 25 November 1963. Additionally, a draft DOD directive, titled "System/Project Management," (undated), is being coordinated within the Defense Department. This document reflects the delegation of authority to the Project Manager and will, when fully implemented, significantly strengthen the project manager's role.*

[4] *Functional authority is defined as the legal right to act or command with respect to specific activities, processes, practices or policies in departments other than the manager's parent department. It is a small slice of the authority of some line manager and relates to particular phenomena in the organization, e.g., the authority of the personnel officer to prescribe certain grievance procedures. The project manager's authority vastly exceeds any that could be delegated using the concept of functional authority.*

[5] *Certain defense companies have taken positive steps in this direction. For example, within the Hughes Aircraft Company the project manager is given official sanction (and thus authority) through the publication of a policy instrument. In the Aerospace Group of Hughes Aircraft Company each of the Product Line Divisions is assigned management responsibility for programs within its product lines; the implementation of these programs is generally accomplished by many different organizational units throughout the company; therefore, the Divisional Manager assigns project managers as necessary to provide the required project-oriented management continuity. The project manager may superimpose a project structure on the existing company organization; the specific authority and responsibility of the project and functional managers are then delineated to insure unanimity of objective. (Hughes Aircraft Company, "Aerospace Group Policy—Project Management, No. 1–15," dated March 25, 1964.)*

Knitwear Industry Advisory Committee Named by DSA

Twelve representatives of the knitwear industry have been named by the Defense Supply Agency to serve as members of an Industry Advisory Committee on knitwear.

The Committee will act as an advisory group, on problems involved in supplying knitwear products to the Armed Forces, to the Agency's Defense Clothing and Textile Supply Center, Philadelphia, Pa. During FY 1964 the Center purchased more than $15,500,000 of knitwear products.

DSA purchases and distributes to the Military Services commonly-used supplies, including food, clothing and textiles, electronic parts, fuel and petroleum products, medical, chemical, industrial, construction and general supplies. It also performs common services for Department of Defense elements. These include surplus property sales, cataloging, and providing research reports and documentation services.

Industry representatives named to the Advisory Committee on knitwear are: Clarence Burton, President, Lynchburg Hosiery Mills, Inc., Lynchburg, Va.; Clarence H. Capers, Vice President, Waynesboro Knitting Co., Waynesboro, Pa.; Pleasant H. Hanes, Jr., President, P. H. Hanes Knitting Co., Winston-Salem, N.C.; James R. Hibshman, President, Lion Knitting Mills, Cleveland, Ohio; Arnold Kramer, President, Kaybe Hosiery Mills of North Carolina, Inc., Thomasville, N.C.; William K. Mauney, Jr., President, Mauney Hosiery Mills, Inc., Kings Mountain, N.C.; Jerome M. Stone, President, Pottsville Mills, Inc., Pottsville, Pa.; Rothermel Wise, President, Howard Knit Products, Gastonia, N.C.; David Rosenblatt, Secretary, Highland Knitting Mills, Inc., Philadelphia, Pa.; Clark Easterly, President, Johnstown Knitting Mills Co., Inc., Johnstown, N.Y.; Eugene C. Gwaltney, Jr., Vice President and General Superintendent, Russell Mills, Inc., Alexander City, Ala.; Ellis Mills, President, Ellis Mills, Inc., Hickory, N.C.

President Johnson Commends Defense Contractors for Cost Reduction

In a personal letter from the President of the United States, 72 defense contractors were commended for responding "vigorously and effectively" to his call for a positive program of cost reduction to help guarantee our country a maximum of defense at a minimum cost.

This response resulted from President Johnson's request to defense contractors early in December 1963 to "intensify efforts" that would "achieve cost reductions in the performance of Defense contracts." Guidelines were established that defined an Effective Contractor Cost Reduction Program for contractors with an annual volume of Defense sales in excess of $5 million.

The "appreciation" of President Johnson was announced April 28 to industrial representatives attending the Washington Advanced Planning Briefings for Industry, when the text of the President's letter to the firms participating in the program was read by Joseph A. Califano, Jr., The Special Assistant to the Secretary and Deputy Secretary of Defense.

Fifty-three of the 72 companies were contributors to the Cost Reduction Exhibits displayed during the

- Aerojet-General Corp.
- American Air Filter Co., Inc.
- American Bosch Arma Corp.
- ARO, Inc.
- AVCO Corp.
- Beech Aircraft Corp.
- Bell Aerospace Corp.
- Bendix Corp.
- Boeing Co.
- Bunker-Ramo Corp.
- Burroughs Corp.
- Collins Radio Co.
- Continental Motors
- Cook Electric Co.
- Cornell Aeronautical Laboratory, Inc.
- Curtiss-Wright Corp.
- Day & Zimmermann, Inc.
- Douglas Aircraft Co., Inc.
- Dynalectron Corp.
- Electronic Communications, Inc.
- Fairchild Camera & Instrument Corp.
- Fairchild-Hiller Corp.
- FMC Corp.
- Garrett Corp.
- General Dynamics Corp.
- General Electric Co.
- General Motors Corp.
- General Precision, Inc.
- Goodyear Aerospace Corp.
- Grumman Aircraft Engineering Corp.
- Gyrodyne Company of America, Inc.
- Hayes International Corp.
- Hercules Powder Co.
- Honeywell, Inc.
- Hughes Aircraft Co.
- International Business Machines Corp.

Washington briefings as well as
ing those previously held in
Angeles, New York, Chicago
Dallas. At the conclusion of
briefings, 128 of the most repres
tive exhibits were displayed for
weeks in the Pentagon concourse

"It was most gratifying," P
dent Johnson noted in his lette
see your company listed among
firms recently called to my atte
by the Secretary of Defense as h
responded vigorously and effect
. . . As promised in my initial l
such achievements will be a si
cant factor in determining f
source selections, and in establi
profit and fee rates for noncon
tive negotiated contracts."

In concluding his letter, Pres
Johnson stated, "Please accept
personal thanks for the achieven
you have made, and for those v
I am certain you will accomplis
the years ahead. You have jus
my optimism that, together, we
achieve our common goal of a dol
worth of defense for every d
spent."

The companies receiving the P
dent's letter were:

- International Harvester Co.
- International Telephone & Teleg Corp.
- Kaiser Industries Corp.
- Kaman Aircraft Corp.
- Kettee Industries
- Kollsman Instrument Corp.
- Lear Siegler, Inc.
- Ling-Temco-Vought, Inc.
- Litton Industries, Inc.
- Lockheed Aircraft Corp.
- Marquardt Corp.
- Martin-Marietta Corp.
- Maxson Electronics Corp.
- McDonnell Aircraft Corp.
- Melpar, Inc.
- North American Aviation, Inc.
- Northrop Corp.
- Olin Mathieson Chemical Corp.
- Pan American World Airways, In
- Philco Corp.
- Radio Corporation of America
- Raytheon Co.
- Remington Arms Co., Inc.
- Republic Aviation Corp.
- Ryan Aeronautical Co.
- Space General Corp.
- Sparton Corp.
- Sperry-Rand Corp.
- Sylvania Electric Products, Inc.
- Thiokol Chemical Corp.
- Thompson Ramo Wooldridge, Inc
- United Aircraft Corp.
- Vitro Corporation of America
- Western Electric Co., Inc.
- Westinghouse Electric Corp.
- Whittaker Corp.

Technical Document Markings to Control Distribution Simplified

A broad new policy which simplifies the markings that can be placed on DOD technical documents to control their distribution has been established by the Department of Defense.

Affecting the full range of technical documentation employed by DOD components and their contractors, the new policy provides that DOD contractors shall use a single distribution statement and instructs DOD offices to use one of five other officially authorized distribution statements. Provision also is made for automatic removal of three of these six distribution statements at the end of three years.

The new policy does not affect any existing regulations relating to markings used for military security purposes. The newly authorized distribution markings are intended for use on either classified or unclassified technical documents, where appropriate.

DOD Directive 5200.20, "Distribution Statements (other than security) On Technical Documents," was issued on March 29, 1965, by Cyrus R. Vance, Deputy Secretary of Defense, to spell out the new policy guidance to all DOD units responsible for generation or handling of technical documents. Units are given until January 1, 1966, to implement the necessary steps and to comply fully with the provisions of the directive.

The one distribution statement allowed for use by DOD contractors has been established by recent revisions to the Armed Services Procurement Regulation (ASPR). It provides for those circumstances in which the DOD obtains only limited rights to the data contained in the technical document. The "limited rights" statement permits the Government to use the data, but disclosure outside the Government is not permitted except in certain specified types of emergency. The "limited rights" statement may be removed only by the contractor or by formal negotiation with the contractor and there is no automatic removal of such statements.

The five DOD-imposed distribution statements represent a graduated set of controls. In order of increasing controls, the five statements provide for (1) world-wide, public dissemination, (2) to U.S. citizens only, (3) within the Government only, (4) within DOD only and (5) within the originating DOD component only. The statement restricting distribution to U.S. citizens only is derived primarily from laws relating to export of U.S. military and commercial know-how, and this statement will remain in effect as long as the laws on which it is based continue in force. The last three statements automatically lose their effect at the end of three years unless the originator takes official steps to continue them for another three years.

The new directive provides that each use of one of the controlling statements be individually justified, and it summarizes the allowable reasons for using each of the controlling statements. It also provides that all copies of a technical report, or other technical data document, shall be marked with the appropriate distribution statement in a prominent location.

Procedures are set forth in the directive for public release of technical documents as they become declassified or as they lose the protection of one of the distribution statements which prevent public dissemination.

Issuance of the directive is a product of studies undertaken more than a year ago to identify and recommend action on factors which inhibit the flow of technical documents in DOD. A committee of representatives from the military departments and from Office of the Secretary of Defense units formulated the basic specifications for DOD action to reduce the variety of distribution statements now being used and to increase the care being taken to insure that each use of such statements is fully justified by the content of each technical document.

Application of Management Skills Emphasized by ICAF's Gen. Steele

Maj. Gen. W. S. Steele, USAF
Deputy Commandant
Industrial College of the Armed Forces

Four basic trends which have evolved with the effective application of management skills in the Office of the Secretary of Defense may be expected to continue with increased emphasis, Major General W. S. Steele, USAF, Deputy Commandant of the Industrial College of the Armed Forces, told members of the National Capital of the Armed Forces Management Association at a luncheon meeting in Washington, D. C., last month.

The speaker said these trends are (1) swift and dynamic systems changes, (2) closer integration of political plans and programs with both short and long-range military plans to achieve national objectives, (3) greater reliance on the capabilities of modern communications and computer-based systems and (4) increased opportunities for centralized policy direction and control, coupled with decentralized policy implementation.

"The size, complexity and immense resources at the disposal of the Department of Defense impose an overriding requirement for only the best in management policies and practices," General Steele said. "In no other area do the results more directly reflect the management skills which are exercised."

"Defense management has been an orderly, phased conceptual evolution, inherent in the development of unified action by the Armed Forces into accepted practice. Trends in defense management have been attributed to many different causes, but no one will deny that current trends reflect the desires of one man—Secretary of Defense Robert S. McNamara. His personal management philosophy is at work constantly—directed towards managers who ask the right questions, suggest the right alternatives, propose the right objectives and stimulate dynamic progress towards the attainment of national objective."

"For the first time," General Steele said, "all planning is being done on a coordinated basis and decisions are being made by and not for decision makers. All combat forces have been brought under the operational control of the Joint Chiefs of Staff, combat effectiveness of these forces has been maintained, greater efficiency and economy have been attained by eliminating duplication and the decision-making process has been strengthened."

The speaker said there is one important item that has influenced all management actions in the Defense Department. This is increased reliance on cost reduction programs which have three basic features: (1) buying only what is needed, (2) buying at the lowest sound price and (3) reducing operating costs. Accordingly, cost effectiveness studies have evolved as prime management tools.

"Our major task is to keep the intricate, rapidly developing field of military management education under close, searching scrutiny," General Steele said. "Our goal is to provide education for today's and tomorrow's defense leaders. Currency, not history, has become our byword. Probing management frontiers and being responsive to trends in defense management has required a dedicated, questioning, forceful and enthusiastic approach. Based upon a careful program of study, experimentation, investigation and planned innovation, the curriculum for the class graduating in June of this year has been reoriented to increase the amount of attention paid to the entire spectrum of defense management."

FROM THE SPEAKERS ROSTRUM

U. S. Army Highlights DOD/NSIA Advanced Planning Briefings

As a special feature, this month's "From The Speakers Rostrum" presents excerpts from the Army addresses given at regional DOD-NSIA Advanced Planning Briefings for Industry held during March and April in Los Angeles, New York City, Chicago, Dallas and Washington, D. C.

The Navy and Air Force presentations will be covered in the next two issues of the Bulletin.

U. S. Army Advanced Planning Requirements

Gen. F. S. Besson, Jr., USA
Commanding General
U. S. Army
Materiel Command

U.S. Army Materiel Command

Our equipment and materiel must daily increase in lethality and effectiveness. We must constantly seek for ease of maintenance and simplicity of operation. Our equipment must be rugged and, at the same time, light in weight, mobile and easily transportable. Because we have, in being, a large Army in the field, deployed around the world, our requirements fall into two broad categories. First there are the day-to-day requirements for equipment—the tested and standardized equipment—to sustain our forces in training here in the Continental United States or deployed overseas. The second category is for new and better equipment . . . .

During Fiscal Year 1966, to meet anticipated requirements for future hardware, it is expected that the Army will spend with industry approximately 4 billion dollars. This outlay of taxpayer's money provides the Army with its day-to-day needs ranging from fan belts to missiles. It also invests in our most important resource—the creative talent of industry. Meeting our needs for tomorrow's hardware will require significant technological breakthroughs . . . .

Operations and Maintenance Needs.

A lesser known kind of Army requirement might be labelled its operations and maintenance needs. Yet it should be obvious, when you think about it, that the Army, at its present size, deployed around the world in such places as Alaska, Korea, Vietnam, as well as here in the United States, has tremendous annual requirements for consumption items, repair parts, minor pieces of equipment and services of all kinds. Satisfying these requirements is a huge logistical job.

The job is to feed, clothe, and house almost a million military personnel, operate and maintain over 100 active major installations, as well as thousands of vehicles, aircraft, tanks, guns and missiles, all over the globe.

. . . . Each year we buy and consume the parts and assemblies for a $200 million in-house major overhaul program and we contract for an additional $70 million worth of equipment maintenance . . . .

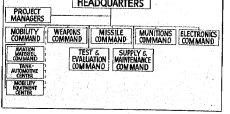
One item of service alone—commercial transportation—costs about a quarter of a billion dollars a year.

This fiscal year the Army will buy from industry approximately $2.5 billion worth of goods and services to meet its operational needs as distinct from end item hardware. Through 1970 we estimate that the rate of spending will remain relatively level. If our estimate is correct, more than $1.75 billion would be spent through our central procurement offices . . . .

Future Requirements.

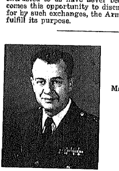
First, our needs are not centered around a few weapons systems. The hardware needed to effect prompt and sustained combat operations must be effective in a variety of geographic and climatic conditions. This equipment must support the soldier on the land as well as in his immediate water and air environment. Above all, the equipment and tools of war must provide the Army a flexibility of response. We may only desire to establish control over an enemy without necessarily destroying him. Our hardware needs to meet these conditions must, therefore, be wide-ranging in scope. All categories of industry, both large and small, have an important place on the Army-industry team.

Second, during the next five years our total procure-



ment will reflect a relatively level rate of spending. Compared with the past five years, our spending for mobility items is expected to increase and our spending for missiles to decrease. This latter trend may be reversed if missile systems now under development are released for production. Our spending for other categories and kinds of hardware and services should remain about the same.

. . . . Today our nation is aware of the need for an active defense industry in this time of uncertain peace. Our responsibilities for wise management of the resources entrusted to us have never been greater. The Army welcomes this opportunity to discuss its plans for the future; for by such exchanges, the Army-Industry team can better fulfill its purpose.



Maj. Gen. J. G. Zierdt, USA
Commanding General
U. S. Army
Missile Command

U.S. Army Missile Command

Here are five general areas where we are working—where we have pressing requirements that could lead to new missile systems . . . .

Defense Against Ballistic Missiles.

. . . . The Nike-X program is now in advanced development and continues under the highest national priority.

We have in early development a system designated SAM-D, Surface to Air Missile Development, formerly known as AADS-70 . . . . Later this year we shall make a selection of proposals concerning SAM-D concepts and recommend initiation of a program definition phase to the Department of Defense. We are looking here for new means of target acquisition and new ways of packaging to get the compactness required to keep the system mobile—a prime requirement for all Army missile systems—on a reasonable number of standardized ground vehicles. The missiles used as kill mechanisms in SAM-D must be small enough to be mobile, rugged enough to stand the bouncing around or movement on the battlefield and fast enough to get out and make a kill before it's too late.

Expanded Anti-Tank Capabilities.

A technical job almost as tough as missile defense is posed by Army requirements for an effective anti-tank weapon . . . .

For the individual soldier, we want an easily operated lightweight direct fire weapon with which he can reach out and kill tanks he can see before they are on top of him . . . .

We need propellants with very high burning rates and some solutions for the structural and aero-dynamic problems caused by the terrific velocities such propellants produces.

Another facet of the problem involves a forward observer with a target in view and some means of homing in a missile on call . . . .

. . . . In short, we know a great many approaches that won't work, and a few that will. There is room for any company with ingenuity in the anti-tank area.

Army Air Assault Operations.

We are trying many systems. The LASER, as an illuminator is a semi-active homing approach, looks good as a means of improving the accuracy of helicopter fire power. One of our more unique problems here is to provide interchangeable weapon systems to avoid specializing the aircraft.

Forward Area Low Altitude Air Defense.

All our operational air defense missiles are mobile, but they must stop and set up before they can fire, and they cannot get all the way forward . . . .

Redeye illustrates a good solution to our requirement for simplicity. We realize we are attempting to cope with intricate threats. They may require complicated solutions. That's fine, provided it's in the shop where it can be handled by engineers and technicians, not in the foxhole . . . .

Division Support with Optimized Non-Nuclear Warheads.

General support missiles and rockets include the weapons and the role you are perhaps most familiar with. In essence they are the Army's long range artillery, used to reach out beyond the range of conventional guns. Since our Sergeant and Pershing ballistic missiles now provide long range nuclear fire support for Army field forces, the emphasis has shifted to meeting the need for non-nuclear fire at extended ranges.

A capability for nuclear and non-nuclear fire is a must for any new general support weapon . . . . If we must have the nuclear shot, we'll need it right now, but in the meantime, we'd like to get some work out of the missile . . . . so we ask for dual capability.

Finally, we need multipurpose missiles that can be used for more than a single type target . . . . Multi-purpose weapons can cost more in money to get, but their real cost in men, materiel, training, logistics and so forth should be much less. The inexpensive solution that will do the job is the one we favor every time . . . .

It's not necessary to knock on our door with an entire new weapon concept to do business with the Army Missile Command. Over the next five years we anticipate spending between 150 and 200 million dollars on critical component work, exploratory and advanced development, in addition to R&D money spent on a particular system such as Nike-X.

To name but a few, we want simplified, lower cost inertial guidance systems; high mass fraction propulsion units; propellants with higher burning rates and lighter weight missile ground support equipment. We are wide

U. S. Army Lance Ballistic Missile

open for new ideas with LASERS for battlefield applications.

How many of you have looked at the possibilities opening up in pure fluid control systems? Pure fluids look simple, and they look to me like a lot of money for the first guy who makes them go the way we want them to go.

Refined specifications for the missiles of the future simply do not exist. So we look to you for good ideas. We are in the market for thoughts as well as things . . . .

If you have any ideas you'd like to try on us, if you desire further information on anything I have said, contact us.

Maj. Gen. W. W. Lapsley,
USA
Commanding General
U. S. Army
Mobility Command

U.S. Army Mobility Command

The Army Mobility Command (MOCOM) is responsible for research and development, procurement maintenance, and supply management of all Army mobility equipment, with the exception of combat vehicles. The Command, with headquarters located in Warren, Michigan, has three subordinate commands, each commanded by a general officer. They are Army-Tank Automotive Center (ATAC), Warren, Michigan; the Aviation Materiel Command (AVCOM), St. Louis, Missouri; and the Mobility Equipment Center (MEC) also in St. Louis.

Our FY 66 Program is estimated at over $1 billion.

Automotive Equipment.

In the automotive equipment field, the FY 66 program will approximate $514 million . . . .

The M151 ¼ ton truck is replacing the M38A1 . . . . Over 25,000 of these vehicles are now on contract for delivery during FY's 65, 66 and 67. Procurement of over 25,000 of these vehicles on a competitive three-year contract amounting to about $70 million is planned for FY 65. Another multi-year buy valued at over $100 million is scheduled for the future . . . .

M-44 2½ ton truck . . . . For FY's 65-66 we plan a competitive procurement of over 15,000 units—amounting to over $100 million. The next large competitive buy is scheduled for a later period, and it will be a multi-year contract valued at over $150 million. We are planning an additional multi-year procurement valued at over $70 million . . . .

Aviation Equipment.

In the field of aviation equipment, about $411 million is expected to be available for development and procurement in FY 1966.

. . . UH-1 Iroquois utility helicopter, more popularly known as the "Huey". Over $800 million is programmed for their procurement in the next several years . . . .

The newest addition to our aircraft is the CH-47 CHINOOK helicopter . . . . Over $200 million in procurement is anticipated during the next few years.

. . . . the Hughes and Hiller Models of the Light Observation Helicopter. They are final competitors for a fixed-price multiple-year buy of approximately 700 aircraft scheduled for award in FY 66.

. . . the experimental aerial crane, developed by Sikorsky. It has a lift capacity of about six tons at moderate ranges, with a maximum capacity of up to 10 tons. A requirement exists for a larger model in the 12 to 20 ton range . . . .

Military Support Equipment.

In the field of other mobility support equipment, the FY 1966 program will approximate $153 million.

Generator sets range in size up to 300 KW with a wide range of frequencies and voltages. Our present forecast shows annual requirements of over $25 million for this equipment over the next several years . . . .

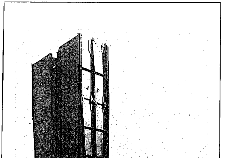
The Universal Engineer Tractor. . . . If testing is successful, a procurement program of $50 million is scheduled within the next several years.

The Mobile Assault Bridge is now being procured. . . . The Army has planned future procurement of over $100 million for this equipment.

Recent technological advances in the field of image intensification have brought new promise to night operations . . . . This procurement program could well run over one-quarter billion dollars over the next several years.

In other fields we must continue our development of amphibious vehicles. We need lightweight precise power turbine generator units, practical fuel cells, and new sources of energy and new propulsion systems for heavy equipment. We need lightweight materials and new engineering and design for bridges, lighter and more sensitive mine detectors, including aerial detection devices, and we must find new materials and methods to permit mass production of high quality lenses for the night vision devices which we require . . . .

In conclusion, there are wide ranging, attractive and challenging opportunities for industry to join with Army in development and production of improved automotive-aviation and other mobility support equipment. Success will not come easy for either of us but with the ultimate stake—our continued freedom—we can't afford less than our best effort.



Mobile Assault Bridge on M-60 Tank

Maj. Gen. F. W. Moorman,
USA
Commanding General
U. S. Army
Electronics Command

U.S. Army Electronics Command

I am going to talk about six major areas in our programs. These are Communications; Combat Surveillance and Target Acquisition as a combined item; Automatic Data Processing; Avionics or aircraft electronics; Image Interpretation; and Electronic Components, or parts. Although we have some good capabilities in these areas, we also have some critical requirements as well.

Communications.

Let's take a general look at communications. . . .

300-line Solid State Switchboard. . . . The Army expects to buy initial lots within 15 to 18 months and procurement for troop issue is expected to start thereafter, with outlays each year of more than 15 million.

VRC–12 and PRC–25 Combat Radio Sets. . . . Over 200 million dollars in contracts have been processed. The Army expects the total for the life of the project to top 400 million—as presently estimated.

Radio Relay Sets and Multiplexers. . . . The Army expects overall procurement, including other essentials, to run about 100 million during the next several years.

Single Sideband Family of Radio Sets. . . . Purchases through the next several years are expected to total more than 50 million dollars.

Multichannel Tropospheric Scatter Radio Set. . . . Starting in the relatively near future, the Army plans to spend about 15 million dollars annually over a period of several years.

UNICOM-STARCOM is a complex of systems which, when grouped together, provide for use of numerous modes of communications, automatic switching, data handling, message processing, and other operations. The program is divided into both research and development and equipment procurement.

Combat Surveillance and Target Acquisition.

. . . . To obtain some of the things we want, the Army plans to devote more than 150 million dollars for surveillance R&D, and we expect to have some sizeable equipment buys as well.

The man-packed radar is one of the items we plan to buy—for better detection of moving personnel and vehicles. It should be standardized during FY 66.

In airborne surveillance, the OV–1 Mohawk systems that we now use variously employ heat-sensitive radar, photography and infrared sensory devices.

As a successor to these, the Surveillance and Target Acquisition Aircraft System, or STAAS, is under study. One proposed system would make use of a high-performance aerial vehicle, advanced sensors, data links, and avionics.

Currently in the test and evaluation phase is Overseer, or the MQM–58A, an airborne surveillance system whose unmanned aircraft make fast reconnaissance flights during either daylight or darkness. . . .

Combat surveillance equipment buys, including the new manpack radar, Overseer, and other items may come to a combined gross of more than 100 million in the future.

Automatic Data Processing.

In continuing work in automatic data processing for handling tactical information and analysis, much of the R&D is encompassed in our Command Control Information Systems 1970, or CCIS–70. Five major sub-systems for field army use are involved. They are for fire support; intelligence; personnel and administration; logistics, and tactical operation centers. It is expected in the near future to announce plans for a symposium early this coming summer at which future plans and programs for CCIS–70 will be discussed with interested members from industry.

Avionics.

. . . . The Army tentatively plans to spend more than 50 million dollars for avionics R&D contracting in the next several years. Equipment purchases for these devices are expected to run about 12 and one-half million annually.

Image Interpretation.

A great deal of the photo-type data obtained through airborne surveillance must be analyzed rapidly for tactical use. The AN/TSQ–43 Tactical Image Interpretation Facility, or TIIF, is representative of some of the progress being made in this area. . . . 1965 may see the initial production of a limited quantity of this equipment. The Air Force has been designated executive agent of a joint program office to develop a next generation of information processing and interpretation systems. . . . Prospective advances in image interpretation will utilize not only real-time transmission of data but will allow real-time—that is, immediate—interpretation of the imagery as well.

Electronic Components.

. . . . For external R&D in components, the Army has allotted more than 75 million dollars through the next several years.

. . . . We want more than low weight and small size in microelectronics. We also want high reliability and designs that can be mass produced at less cost than present conventional electronics.

Advanced work in transistors remains a wide open field. . . .

Fuel cells are but one example of work aimed at meeting the need for more efficient silent power sources for combat use. . . .

Continuing research, through basic, exploratory and applied levels, is the life blood for successive generations of weapons and systems for the field. There is no limit on new discovery. To the contrary, each new discovery triggers off a progression of still more discoveries to come.

As has been the case, we shall, of course, depend upon industry to provide us with a good share of the new discoveries through which the vitality of our defense is maintained. And we re-emphasize that the door swings both ways. When we do not come to you, call on us. The Army has a continuing interest in receiving and evaluating unsolicited proposals containing new ideas, suggestions, and inventive concepts for weapons, supplies and equipment. You can be sure that your ideas will be carefully considered. . . .

Maj. Gen. R. B. Anderson,
USA
Commanding General
U. S. Army
Weapons Command

U.S. Army Weapons Command

During FY 1966, the Weapons Command will place contracts with industry for shooting hardware amounting to approximately $260 million. Through 1970, we estimate that the rate of spending will remain relatively level.

Let's take a look at some of our principal programs.

First, the Army's M60A1 Tank . . . . The Army expects its program for this vehicle through the next few years to amount to several hundred million dollars.

There are two adaptations of the M60 Tank for specialized tasks, the Combat Engineer Vehicle and the Armored Vehicle Launched Bridge.

. . . . The procurement program for these vehicles in FY 66 should amount to about $21 million.

. . . . We will procure about $90 million worth of the M109 self-propelled 155mm Howitzer during FY 1965 and FY 1966.

We will spend an additional $25 million on M110 eight inch Howitzers and the M107 175mm guns.

Additionally we will spend about $26 million for a retriever version of the M107/M110 which mounts a wrecker boom and is designed for battlefield recovery of disabled vehicles.

The newest development in our armored vehicles has been named the General Sheridan . . . .

Over the next several years our procurement program for the Sheridan will amount to more than one-quarter billion dollars.

Still another advanced vehicle is under development, the Mechanized Infantry Combat Vehicle . . . . If the development program for the MICV is successful and the Army gets the go-ahead, procurement for this vehicle is currently estimated at more than $100 million.

In aircraft weaponization probable procurement for the M5 40mm Grenade Launcher could amount to a little over $7 million in the next few years.

Another aircraft weapons subsystem being considered is the XM21, a machine gun-rocket launcher combination. Expenditures over the next several years could amount to approximately $26 million.

Finally, in the major procurement field, we expect to buy four versions of the well-known M113 Armored Personnel Carrier . . . .

. . . . The expected procurement for the four versions of the M113 could amount to more than $100 million over the next few years.

The research and development program of the Weapons Command is running at an annual level of about $40 million. The forecast for the next several years is that this rate will remain relatively level.

A new rifle, the SPIW, is designed to enhance the killing power of the individual soldier. It is well along in the concept study stage.

The concept of a lightweight, unarmored, self-propelled 155mm Howitzer is under scrutiny. And these are just two of the many items under study.

In the vehicular armament field, we are working for cannon with higher velocity, more rapid rates of fire, and improved accuracy. New mortars are on the drawing boards and in development.

In fire control, we are exploring more sophisticated systems which will be less complicated to operate and more nearly approach an all-weather capability.

In combat vehicles, we are looking for significant improvements—for better cross-country capability, an engine that efficiently uses more than one fuel, more rugged track and suspensions systems, better swimming ability as well as improved armor and better tank defeating armament.

Next comes aircraft weaponization. Up to now we have been mounting infantry type weapons in our aircraft. We need configurations specifically designed for aircraft. We must develop a capability to deliver stand-off fire so the aircraft need not be over the target to engage the enemy. Machine guns of various calibers, several of which utilize the Gatling-gun principle, are under development. Weight of the weapon system must be held to the absolute minimum. Recoil must be reduced or eliminated.

In aircraft fire control, we need rapid solutions to range computations, automatic tracking, and increased night capability.

Joint Meteorological Satellite Program Office Established

The Defense Department has established a Joint Meteorological Satellite Program Office (JMSPO) to coordinate requirements for the use of meteorological satellites by the Military Services.

For the past several years, DOD has been working in cooperation with the Weather Bureau on the National Weather Satellite Program. This experience has shown that this new technology is important to military operations. Satellite meteorological information can assist in such military areas as missile launches, tests of re-entry vehicles, targeting data and fleet movements.

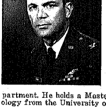
The JMSPO has the following responsibilities:

- In cooperation with the U. S. Weather Bureau, continually review the National Aeronautics and Space Administration's meteorological satellite program to define military applications of the national system and arrange DOD technical efforts to support the national program.
- Collect and coordinate Military Service and Joint Chiefs of Staff requirements relative to meteorological satellites.
- Provide staff management of any DOD meteorological satellite development efforts.
- Provide DOD support and technical assistance to U. S. representatives engaged in international discussion on weather satellites.
- Perform other tasks and functions relative to weather satellites as might be directed by the Office of the Director of Defense Research & Engineering.

The new office is jointly staffed with meteorological specialists from all three services. It is assigned to the Office of the Deputy Chief of Staff, Research & Development, Headquarters, U. S. Air Force, and receives overall guidance from the Office of the Director of Defense Research & Engineering.

Directing the office is Colonel Peter E. Romo, USAF. Other staff members are: Lieutenant Colonel N. L. Durocher, USA; Commander W. S. Houston, USN; and Lieutenant Colonel D. J. Eddleman, USAF.

The JMSPO is located in Room 4D227, The Pentagon; telephone numbers are OXford 7-9070 and OXford 7-9168.



Colonel Peter E. Romo, USAF, Director of the Joint Meteorological Satellite Program Office (JMSPO), of the Department of Defense. Prior to his assignment to JMSPO, Colonel Romo was Staff Meteorologist for Cape Kennedy and the Eastern Test Range. While in that position he participated in the entire Mercury Program of the National Aeronautics and Space Administration as well as launches of several missile system programs of the Defense Department. He holds a Master of Science degree in meteorology from the University of California at Los Angeles.

BIBLIOGRAPHY

DOD Directive 4105.62, "Proposal Evaluation and Source Selection," April 6, 1965. Establishes DOD objective principles and policy for the evaluation of proposals and the selection of contractual sources.

DOD Instruction 4270.7, "Air Conditioning, Evaporative Cooling, Dehumidification and Mechanical Ventilation," March 8, 1965. Establishes design and installation policy for air conditioning, evaporative cooling, dehumidification and mechanical ventilating equipment.

DOD Instruction 5100.38, "Defense Documentation Center for Scientific and Technical Information (DDC)," March 29, 1965. Provides for policy direction by the Director of Defense Research and Engineering and operational control by the Director, Defense Supply Agency, of the Defense Documentation Center for Scientific and Technical Information. It also delineates participation responsibilities of all DOD components engaged in research, development, test and evaluation efforts.

DOD Directive 5160.51, "Time and Time Interval Standards and Calibration Facilities for Use by Department of Defense Components," Feb. 1, 1965. Establishes policy and assigns responsibility to the U.S. Naval Observatory for establishing, coordinating and maintaining capabilities for time and time interval (astronomical and atomic) for use by all DOD components, DOD contractors, and related scientific laboratories.

DOD Directive 5200.20, "Distribution Statements (Other Than Security) on Technical Documents," March 29, 1965. Supplements DOD Directives 5100.36 and 5200.6 establishing official distribution statements to be used by all DOD components and providing direction in their use.

DOD directives and instructions may be obtained from:
Publications Distribution Branch
Office of the Secretary of Defense
Room 3B938, The Pentagon
Washington, D.C. 20301

Defense Procurement Circular No. 25, March 31, 1965. Principles for Determining Costs Applicable to Research and Development Under Grants and Contracts with Educational Institutions; Administration of Contracts with Canadian Contractors.

Defense Procurement Circular No. 26, April 8, 1965. Extension of Defense Procurement Circular No. 11 and Modification of Value Engineering; Addition to Paragraph 1-1703.3, *Future Acquisition Savings;* List of 100 Contractors Awarded the Largest Dollar Amount of Defense Contracts; Amendment of Section XIII, Government Property—Revision No. 8, dated Nov. 1, 1964, as Amended by Defense Procurement Circular No. 23; Patent Policy of Educational or Non-Profit Institutions; Procedure for Approval of Educational or Non-Profit Institutions; Procedure for Approval of Patent Policy of an Education or Non-Profit Institution; List of Educational or Non-Profit Institutions Having Patent Policy Approved by the DOD under the ASPR.

Each Defense Procurement Circular (DPC) is designed to place new or changed policies or procedures in effect prior to publication of an Armed Services Procurement Regulation (ASPR) revision. The items in each circular are cancelled after six months, unless specifically eliminated earlier by a new DPC or by publication in the ASPR. ASPR subscribers will receive Defense Procurement Circulars through the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Dictionary of United States Military Terms for Joint Usage (Short Title: JD). A dictionary of United States military terms prepared under the direction of the Joint Chiefs of Staff in coordination with the military services for planning and operational usage. The appendix contains the NATO glossary of terms and definitions. Rev. Dec. 1964. 249 p.

Catalog No. D5.12:1/5 $1.50

Incentive Contracting Guide, 1965. Developed to assist in the proper application of the DOD objective to harness the profit motive to work for the truly effective and economical performance required in the interest of national defense, this incentive contracting guide discusses the nature and objectives of incentive contracts; cost, schedule and performance incentives; multiple-incentive contracts; changes; trade-off analyses; and exceptional methods of structural multiple incentive contracts.

Catalog No. D7.6/4:In2/965 $1.25

U.S. Industrial Outlook 1965 (Third Printing). Analyzes trends since 1960, reports vital background information and statistics, gives detailed, industry-by-industry review of 1964, and outlines prospects for 1965. Prepared by BDSA Business and Industrial Specialists, it provides the latest facts and figures on production, sales, shipments, employment, productivity, imports and exports, new products and developments. 180 p. il.

Catalog No. C41.42/3:965 $1.00

Compilation of Laws Relating to Mediation, Conciliation and Arbitration between Employers and Employees. A compilation of laws relating to mediation, conciliation and arbitration between employers and employees —disputes between carriers and employers and subordinate officials under labor board, eight-hour laws, employers' liability laws, and labor and child labor laws. 859 p.

Catalog No. Y1.2EM 7/0/964 $2.20

Ranger VII, Photographs of the Moon, Part 1, Camera A Series. The text of this publication includes chapters on Ranger VII mission description and trajectory; impact-area selection and camera terminal alinement; television system description—cameras, receiving and recording equipment, camera calibration, film recording and processing — and camera A table of values.

Catalog No. NAS1.21:61 $6.50

History of Communications-Electronics in the United States Navy. An authoritative history of the Navy's role and problems in establishment of disciplined usage and in developing and aiding development of equipment to improve the art. The Navy's development of radar, sonar, proximity fuzes, radio controlled torpedoes, and guided missile products of the electronic age. A chronology of developments in communications and electronics is included in the Appendix. 075 p. il.

Catalog No. D211.2:E12/7 $4.75

Publications that require remittance are available for purchase at U.S. Government Printing Office, Washington, D.C.

NOTES FOR EDITORS

NAVY COMPLETES EVACUATION OF ARLIS II

Early in May the Navy completed evacuation of ARLIS II, a floating ice island scientific station which had been manned since 1961. Dr. Max Britton, Chief of the Office of Naval Research Arctic section, proclaims ARLIS II to be the most exciting development in Arctic research in recent years. The ice island broke from the circular Arctic current early in the winter and floated down the east coast of Greenland, providing the Navy with its first close study of this access route to the Polar Basin. Pictures, scientific data and the adventure aspect lend this three-year operation to any number of article approaches.

SEA LAB II OPERATION SCHEDULED TO BEGIN AUGUST 15, 1965

Another aspect of the Navy's growing "inner space" research is Operation Sea Lab II at La Jolla, California. Sea Lab II is scheduled to begin in August and continue for 30 days with the aquanauts living at a depth of 250 feet. In addition, a number of deep submergence and oceanographic research vessels are now in or nearing operations—ALVIN, ALUMINAUT, SPAR, FLIP.

DINER'S CLUB IN THE FIELD

The Army's new field food packets are far removed from the fabled field rations of World War II. The packets contain assorted meals with caloric values ranging from 934 to 1,133. Typical meals are beef hash, cereal bar, coffee, cream and sugar; chicken stew, fruitcake bar, cocoa; spaghetti with meat sauce, and cocoanut bar and cocoa. The packets are light enough to permit a soldier to carry a 10-day supply in the field. The packet was developed by the Limited War Laboratory at Aberdeen Proving Ground and the U.S. Army Laboratory, Natick, Massachusetts.

THE TARGET THAT THRIVES UPON NUCLEAR ATTACK

More than 20,000 times a month small groups of men place themselves within the range of a simulated thermonuclear blast. The details leading up to their potential obliteration are as correct as the trained radar-navigators of the Strategic Air Command can make them. The only thing lacking is a live warhead dropping from either high or low altitudes to destroy the target, which in this case is the Radar Bombing Site (RBS). What makes the RBS so valuable to the maintenance of the strategic deterrent is that it offers proof of the proficiency of SAC's crews and provides a changing challenge of varied targets at various cities. RBS is mounted in nine railroad cars with eating and sleeping facilities that are moved to different points around the country. The RBS crews are towed to a spot and then "shop" is set up for a period of 45 days. There are three such trains, one assigned to each of SAC's stateside numbered Air Forces. About 65 Air Force personnel are aboard each train.

FROM BERYL POWER TO EMERALDS IN TWO MINUTES

Scientists at the Naval Ordnance Laboratory have created synthetic emeralds of gem quality in about two minutes. The crystals are attracting attention in the semiconductor electronics field because of the maser characteristics of emeralds. A high-temperature, high pressure technique produces clear single crystal emeralds directly from beryl powder, and in far less time than is taken with the hydrothermal, flux or flame-fusion methods of synthesizing crystals. Wayne Wilson and Hubert Hall, NOL's co-inventors of the process, also report that the color of the crystals can be controlled easily by substituting various amounts of metallic oxides, particularly chromic osice, in the basic beryl powder.

FIGHTERS TO CHECK MISSILE SYSTEMS AGAINST SUPERSONIC TARGETS

Navy and Air Force fighters are undergoing actual test of operational systems against supersonic BOMARC drone targets. Tactical Air Force and Air Defense Command aviators using F–101, F–104, F–106 and F4C systems are participating in the operational evaluations. Later this year, the Navy will use the BOMARC to test the Terrier missile system which is aboard guided missile frigates and cruisers. The 1600-mph missile has been converted for drone use by Air Force technicians at Eglin AFB, Fla. The first drone was fired upon in February. The BOMARC A has a range of 250 miles and was operational for several years before replacement.

ARMY TO PUBLISH "SOUTHWEST PACIFIC SERIES" IN 1966

The operations reports of General of the Army Douglas MacArthur, published in three-volume series entitled "Southwest Pacific Area Series," are expected to be available to the public in 1966. General MacArthur turned over the page proofs for this series to the Department of the Army along with a large collection of source documents. This material is available for research purposes in the World War II Records Division, National Archives, in Alexandria, Va.

Any Editor interested in any information relating to the Department of Defense is invited to write to Chief, Magazine & Book Branch, OASD (PA), Washington, D.C. 20301.

About People

(Cont. from Page 7)

M. Johnson, Jr., Asst. for Mutual Security, DCS/Systems & Logistics, Hq., USAF; and **Col. Edmund F. O'Conner**, Dir., Industrial Operations, Manned Space Flight Center, NASA.

Maj. Gen. Benjamin O. Davis, Jr., has been nominated for promotion to lieutenant general and reassignment from Asst. Dep. Chief of Staff, Programs & Requirements, Hq., USAF, to Chief of Staff, U. S. Forces, Korea, and Chief of Staff, United Nations Command, Korea.

Lt. Gen. Thomas S. Moorman will be reassigned from Vice Commander in Chief, Pacific Air Forces, to Superintendent, U. S. Air Force Academy, about July 1.

Maj. Gen. Henry G. Thorne, Jr., became Commander, 17th Air Force, on April 19; **Brig. Gen. Luther H. Richmond** was assigned as Dep. Chief of Staff, Operations, U. S. Air Forces in Europe, effective April 19.

Project Manager

(Cont. from Page 14)

- Project manager must have necessary executive rank to insure responsiveness to his requirements within the parent organization and be accepted as the authoritative agent of the parent organization in dealing with outside organizations.

- The project manager requires a well-qualified staff; his authority should include prerogatives relative to the staffing of his office from supporting functional agencies as required during the life of the project.

- No major technical, cost, schedule or performance decisions should be made without his participation.

- He should have sufficient authority and capability to control the allocation and expenditure of funds, and to actively participate in budgeting and schedule deliberations involved in the project.

- The project manager provides a single contact for exterior organizations involving major project considerations. He should have direct involvement in the selection of contractors to support the project effort. His authority should be the ultimate authority recognized by the official in the contractor's organization who is charged with contractual actions.

- The project manager should have the prerogative of submitting letters of evaluation on the adequacy of the support given him by the functional managers. Such letters could be used in evaluating the efficiency of the functional managers.[6]

- The project manager occupies a unique position of responsibility; within contemporary organizations he appears as a threat to the ingrained functional approach to the management process. Proliferation and potential dominance by staff agencies lends one to fear that the project manager could become merely a symbol of leadership without adequate acceptance to provide forceful and authoritative leadership. Tyrannical assumption of *project authority* by supporting staff and line managers can seriously hamper progress towards the project objective; traditional management theory cautions against usurpation of the line manager's authority by staff officials. The same risk occurs for the project manager who may find it difficult to be selective in the abundant staff and line assistance that is made available—and some cases directed—to him from organizational elements located in upper hierarchial positions.

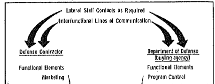


Figure 1

Focal Position of the Project Manager.

The inter-organizational relationship depicted in Figure 1 reflects the situation when two organizations have a mutuality of interest in a large project; the establishment of a special project office in both the buyer's and seller's organization provides for a point of synthesis for the concentration of attention on the major problems of the project. The two managers, in such a face-to-face relationship, can control and resolve interfunctional and inter-organizational problems. Overlapping of the two project managers implies an area of inescapable interdependence in matters involving the project.

Conclusion

Project management is presented as a means of managing the development and acquisition of weaponry in an environment which requires the crossing of many functional and organizational lines of authority. As a unifying force, the project manager integrates the parochial interests of autonomous organizations toward a common objective; traditional concepts of authority, responsibility, and organizational theory are altered by the emergence of *project authority*, a new and unique application of authority in contemporary organizations. Project management is a relatively recent phenomenon; as existing organizations become larger and more interdependent, the role of the project manager will come into clear focus.

References

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Moot and Riley Get New Posts in Realignment of OASD (I&L)

In a realignment of certain functions within the office of the Assistant Secretary of Defense (Installations & Logistics), Mr. Robert C. Moot has been named the Deputy Assistant Secretary of Defense (Logistics Services). The Logistics Services function includes policy formulation and management in the fields of tele-communications, transportation and warehousing contract support services and the DOD cost reduction program.

Mr. Paul H. Riley, formerly the Deputy Assistant Secretary of Defense (Supply & Services), has become the Deputy Assistant Secretary of Defense (Materiel Requirements). He is responsible for the management and policy areas associated with requirements for and production of weapons, major end items of equipment, repair parts and soft goods, supply management systems and petroleum logistics.

Mr. Moot, prior to the appointment to his new position, was Comptroller of the Defense Supply Agency (DSA). Before becoming the first Comptroller of DSA in 1961, he was the Director for Supply Management Policy in the office of the Assistant Secretary of Defense (Supply & Logistics).

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[6] *Such a procedure would doubtlessly appear repugnant to the functional manager because of a suspected violation of the venerable superior-subordinate relationship. However, there is a direct correlation between the project success and the efficacy of functional support; consequently, the project manager should be given the greatest possible "leverage" in the application of project authority.*

DEFENSE PROCUREMENT

Contracts of $1,000,000 and over awarded during month of April 1965:

DEFENSE SUPPLY AGENCY

2—**Usibelli Coal Mine, Inc.**, Fairbanks, Alaska. $1,143,007. 192,750 tons of coal. Defense Fuel Supply Center, Washington, D. C.

8—**Socony Mobil Oil Co., Inc.**, New York, N.Y. $2,197,365. Automotive gasoline and fuel oil. Defense Fuel Supply Center, Washington, D.C.

—**Gulf Oil Corp.**, Houston, Tex. $1,691,246. Automotive gasoline and fuel oil. Defense Fuel Supply Center, Washington, D.C.

9—**Trenton Textile Engineering & Mfg. Co.**, Trenton, N.J. $1,524,600. 150,000 rucksacks. Trenton, N.J. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

12—**Safety First Shoe Co., Inc.**, Nashville, Tenn. $1,155,922. 206,784 pairs of combat boots. Huntsville, Ala. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

14—**Burlington Industries, Inc.**, Erwin Mills Div., New York, N.Y. $2,411,438. 1,360,500 cotton bed sheets. Durham, N.C. and Post, Tex. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

16—**General Aniline and Film Corp.**, Binghamton, N.Y. $2,102,916. 117,662 packages of radiographic film. Binghamton, N.Y. Defense Medical Supply Center, Brooklyn, N.Y.

20—**Ingersoll Products Div., of Borg Warner Corp.**, Chicago, Ill. $1,334,837. 327,970 steel helmets. Chicago, Ill. Defense Clothing & Textile Supply Center, Philadelphia, Pa.

ARMY

1—**LaCrosse Dredging Corp.**, Chicago, Ill. $1,366,005. Work on Sny Island Levee Drainage Dist., Flood Control Project. Quincy, Ill. U.S. Army Engineer Dist., Rock Island, Ill.

2—**Hardaway Contracting Co.; Sam Finley, Inc.; and Ryan Contracting Co., Inc.**, Atlanta, Ga. $4,742,780. Construction work on Newburgh Lock and Dam, Ind. and Kentucky Project. Newburgh, Ind. Engineer Dist., Louisville, Ky.

—**Philco Corp.**, Aeronutronics Div., Newport Beach, Calif. $2,272,328. SHILLELAGH industrial engineering services. Los Angeles Procurement Dist., (AMC), Pasadena, Calif.

6—**Dravo Corp.**, Pittsburgh, Pa. $28,853,975. Construction work on Racine Locks and Dam, Ohio River Project. Ravenswood, W. Va. Dist. Corps of Engineers, Huntington, W. Va.

—**Eugene Luhr Co.**, West Sacramento, Calif. $1,381,760. Work on the Alameda Creek Channel Improvement Project, Alameda, Calif. District Corps of Engineers, San Francisco, Calif.

—**Batesville Mfg., Co.**, Batesville, Ark. $1,395,825. Ammunition components. Batesville, Ark. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—**Davis Construction Corp.**, Hicksville, N.Y. $1,313,724. Work on the Chesapeake and Delaware Canal Project. New Castle County, Del. District Corps of Engineers, Philadelphia, Pa.

6—**Bauer Dredging & Construction Co., Inc.**, Port Lavaca, Tex. $3,438,202. Dredging work on the Delaware River Project. Marcus Hook, Pa. Dist. Corp of Engineers, Philadelphia, Pa.

7—**Dravo Corp.**, Pittsburgh, Pa. $4,690,050. Manufacture and delivery of 67 hoists and 63 gates for locks and dams of the Arkansas River and Tributaries Project. Equipment will be manufactured in Pittsburgh and delivery will be made to various job sites along the Arkansas River. Dist. Corps of Engineers, Little Rock, Ark.

—**General Motors Corp.**, Detroit, Mich. $2,500,600. Design and development of the new main battle tank. Warren, Mich., and in Germany. Army Tank Automotive Center (AMC), Warren, Mich.

8—**Fisher Construction Co.**, Houston, Tex. $1,497,728 (NASA funds). Construction of a LUNAR Mission and Space Exploration Facility at the Manned Spacecraft Center, Houston, Tex. Dist. Corps of Engineers, Fort Worth, Tex.

—**Kaiser Jeep Corp.**, Toledo, Ohio. $2,492,537. Modification for 417 2½-ton trucks. South Bend, Ind. Army Mobility Command (AMC), Warren, Michigan.

9—**White Brothers Construction, Ca., Inc., and Ott-Atwater, Inc.**, Walla Walla, Wash. $1,619,854. Construction and excavation work on the Blue River Reservoir Project. Blue River (Lane County), Oregon. Portland, Oregon, Engineer Dist.

12—**General Motors Corp.**, Cadillac Motor Car Div., Cleveland, Ohio. $20,656,173. Four year buy of M109 Medium Self-Propelled 155mm Howitzers and XM551 Armored Reconnaissance/Airborne Assault Vehicles. Army Tank Automotive Plant in Cleveland. U.S. Army Weapons Command (AMC), Rock Island, Ill.

—**Baxter Construction Co.**, Houston, Tex. $1,720,973 (NASA funds). Construction of electronics systems compatability facility at the Manned Spacecraft Center, Houston, Tex. Engineer Dist., Fort Worth, Tex.

—**REDM Corp.**, Wayne, N.J. $1,026,853. Head assemblies for mortar fuzes. Wayne, N.J. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—**Hughes Tool Co.**, Aircraft Div., Culver City, Calif. $5,560,046. Primary helicopter trainers with installed engines. Culver City, Calif. Aviation Command (AMC), St. Louis, Mo.

14—**Eltra Corp.**, Prestolite Co. Div., Toledo, Ohio. $1,062,185. 2,564 generators and 8,329 armatures for tactical vehicles. Bay City, Mich. Army Tank Automotive Center (AMC), Warren, Michigan.

15—**Norris-Thermador Corp.**, Los Angeles, Calif. $1,044,835. 105mm ordnance items. Los Angeles, Calif. Los Angeles Procurement Dist. (AMC), Pasadena, Calif.

—**M.M. Sundt Construction Co.**, Tucson, Ariz. $1,638,235. Work on the Gila River and Tributaries, Arizona and New Mexico Project. Diversion Channel (Phase III) at Tucson, Ariz. Dist. Corps of Engineers, Los Angeles, Calif.

Contract Index

Contract information is listed in the following sequence: Date—Company—Dollar Value—Material—Location Work Performed—Contracting Agency.

—**FMC Corp., Ordnance Div.**, San Jose, Calif. $3,444,000. 42 tracked trucks and 14 fork lift attachments and bulldozer blade attachments for the Air Force. San Jose, Calif. San Francisco Procurement Dist. (AMC), Oakland, Calif.

—**Pearce & Greshom Co.**, Decatur, Ala. $1,332,544. Construction of missile systems calibration facility at the Redstone Arsenal, Ala. Mobile Ala., Dist. Corps of Engineers.

16—**Akwa-Downey Construction Co. and Radio Communications Co., Inc.**, Milwaukee, Wis. $3,199,500. Furnishing and installing instrumentation and communications cable at Launch Complex No. 39 at Merritt Island, Fla. Canaveral Dist. Corps of Engineers, Merritt Island, Fla.

—**John R. Hollingsworth Co.**, Phoenixville, Pa. $1,485,718. 3,128 generator sets. Phoenixville, Pa. Engineer Procurement Office (AMC), Chicago, Ill.

19—**Eugene Luhr & Co.**, Sacramento, Calif. $1,430,379. Excavation work on the Walnut Creek Channel Improvement Project. Concord, California. Dist. Corps of Engineers, Sacramento, Calif.

—**Dennis Brothers Contractors**, Jackson, Miss. $4,089,512. Work on the Jackson and East Jackson Local Flood Protection Project. Jackson, Miss. Army Engineer Dist., Mobile, Ala.

—**Norfolk Dredging Co.**, Norfolk, Va. $1,194,054. Work on the Inland Waterways Project. Sarasota and Venice, Fla. Dist. Corps of Engineers, Jacksonville, Fla.

22—**Inlet Co., Inc.**, Anchorage, Alaska. $1,221,800. Construction of an addition to the existing West Anchorage High School. Anchorage, Alaska. Alaska District Corps of Engineers, Anchorage, Alaska.

—**Donovan Construction Co., Power Engineering Co., Inc., & Leslie Miller, Inc.**, St. Paul, Minn. $3,708,213. Work on the Keystone Reservoir Project. Tulsa, Okla. District Corps of Engineers, Tulsa, Okla.

23—**Glenroy Construction Co.**, Indianapolis, Ind. $1,405,816. Construction of two enlisted men's barracks and supporting utilities at Fort Benjamin Harrison, Ind. District Corps of Engineers, Chicago, Ill.

—**Thompson-Ramo-Wooldridge Space Technology Laboratories, Inc.**, Redondo Beach, Calif. $1,102,000. Modification to an existing cost-plus-fixed-fee contract for work on a classified project. U.S. Army Electronics Command (Army Materiel Command), Fort Monmouth, N. J.

—**Williams-McWilliams Industries, Inc.**, New Orleans, La. $1,008,691. Rental of a Cutter Head Hydraulic Pipe Line Dredge. Mississipi River. Engineer District, Vicksburg, Mississippi.

—**Electronic Modules Corp.**, Timonium, Md. $1,000,000. Classified Electronics. Timonium, Md. U.S. Army Electronics Command (AMC), Fort Monmouth, N.J.

26—**Standards Products Co.**, Cleveland, Ohio. $1.169,550. Shoe assemblies for M113 personnel carrier. Port Clinton, Ohio. Army Tank Automotive Center (AMC), Warren, Mich.

—**FMC Corp., Ordnance Div.**, Charleston, W. Va. $38,442,675. M113 vehicles and spare parts. Charleston. Army Tank Automotive Center (AMC).

—**George E. Detzel Co. and Carl M. Geupel Construction Co.**, Cincinnati, Ohio. $5,424,048. Work on Huntington Reservoir Project, Huntington, Indiana. Louisville, Ky., District Corps of Engineers.

27—**General Motors Corp., Detroit Diesel Div.**, Detroit, Mich. $1,460,053. Six-cylinder, 210 horsepower diesel engines. Detroit, Mich. Army Tank Automotive Center (AMC), Warren, Mich.

28—**L. Johnson Construction Co.**, Minneapolis, Minn.; **Dravo Corp.**, Pittsburgh, Pa. and **Massman Construction Co.**, Kansas City, Mo. $22,109,400. Work on Ozark Lock & Dam Project. Ozark, Ark. Engineer District, Little Rock, Ark.

29—**Bell Helicopter Co.**, Fort Worth, Tex. $1,570,128. UH–1B and UH–1D IROQUOIS helicopters. Hurst, Tex. U.S. Army Aviation Command (AMC), St. Louis, Mo.

—**SCM Corp., Kleinschmidt Div.**, Deerfield, Ill. $1,399,546. Teletypewriter sets (AN/UGC–4 and TT–98/FG) with ancillary items. Deerfield. Procurement Div. of Electronics Command (AMC), Philadelphia, Pa.

—**Oneglia and Gervasini, Inc.**, Torrington, Conn. $5,726,021. Work on Colebrook River Reservoir Project. Colebrook, Conn. New England Engineer Div., Waltham, Mass.

—**Magnavox Co.**, Fort Wayne, Ind. $23,462,116. Radio receivers of various types. Fort Wayne, Ind. Procurement Div. of the Electronics Command (AMC), Philadelphia, Pa.

—**Raytheon Co.**, Lexington, Mass. $2,381,784. Quality assurance, control and engineering services. Andover, Mass. U.S. Army Missile Command (AMC), Redstone Arsenal, Huntsville, Ala.

30—**Remington Arms Co., Inc.**, Bridgeport, Conn. $10,954,110. Small arms ammunition. Lake City Army Ammunition Plant, Independence, Mo. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Hercules Powder Co.**, Wilmington, Del. $4,694,250. Miscellaneous propellants and explosives. Radford Army Ammunition Plant, Radford, Va. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Ford Motor Co.**, Dearborn, Mich. $2,402,367. 1,687 commercial sedans. Claycomo, Mo. Army Tank Automotive Center (AMC), Warren, Mich.

—**White Motor Co.**, Lansing, Mich. $14,617,430. 2,816 cargo trucks, 2½ ton. Lansing, Mich. Project Manager, General Purpose Vehicles (AMC).

—**FMC Corp., Ordnance Div.**, San Jose, Calif. $1,163,788. Shoe assemblies for M113 personnel carrier. Muncie, Ind., Filer City, Mich. and Charleston, W. Va. Army Tank Automotive Center (AMC).

—**General Time Corp., Westclox Div.**, LaSalle, Ill. $7,119,962. Partially loaded metal parts and fuzes. Peru, Ill. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Oshkosh Motor Co.**, Oshkosh, Wis. $4,310,191. 75 snow removal units. Oshkosh, Wis. Engineer Procurement Officer (AMC), Chicago, Ill.

—**Sperry Rand Corp., Sperry-Utah Co. Div.**, Salt Lake City, Utah. $3,234,269. Modification kits for the SERGEANT missile system. Salt Lake City, Utah. Los Angeles Procurement District (AMC), Pasadena, Calif.

—**Olin Mathieson Chemical Corp., Winchester Western Div.**, East Alton, Ill. $2,005,140. 5.56mm tracer cartridges. East Alton, Ill. Frankford Arsenal (AMC), Philadelphia, Pa.

—**Ashburn and Groy, Inc.**, Huntsville, Ala. $1,656,864. Construction of phase II of the road network at Marshall Space Flight Center, Huntsville, Ala. Engineer District, Mobile, Ala.

—**Emerson Electric Co., Electronics and Space Div.**, St. Louis, Mo. $1,327,884. Production of rocket motor inert parts for HONEST JOHN missile system. St. Louis, Mo. U.S. Army Missile Command (AMC), Huntsville, Ala.

—**N. R. Hamm Contractors, Inc.**, Perry, Kan. $1,991,279. Flood protection work at section two of Kansas River tributaries, Colorado, Nebraska, and Kansas Project. Topeka, Kan. Engineer District, Kansas City, Mo.

—**FMC Corp.**, San Jose, Calif. $1,208,685. Continuation of engineering services, repair, provisioning and maintenance evaluation for vehicles and weapons. San Jose, Calif. San Francisco Procurement District (AMC), Oakland, Calif.

30—**La Pointe Industries**, Rockville, Conn. $1,134,690. Radio sets (AN/ARC–44). Rockville, U.S. Army Electronics Command (AMC), Philadelphia, Pa.

NAVY

1—**Stanford University**, Stanford, Calif. $2,275,000. Continuation of research & development in the field of nuclear physics. Office of Naval Research.

2—**University of Chicago**, Chicago, Ill. $1,250,000. Research & development in the field of nuclear physics. Office of Naval Research.

5—**Bendix Corp., Bendix Radio Div.**, Baltimore, Md. $2,450,590. Radio receivers for installation on naval ships. Baltimore, Md. Bureau of Ships.

—**American Electronic Laboratories, Inc.**, Colmar, Pa. $1,755,857. Radio transmitters for use on naval ships and at shore installations. Colmar, Pa. Bureau of Ships.

6—**General Electric Co.**, Pittsfield, Mass. $2,336,221. Mark 84 Fire Control System Support for the Polaris Missile. Pittsfield, Mass. Special Projects Office.

—**General Precision, Inc., Aerospace Group**, Little Falls, N.J. $1,000,000. Research & development on airborne gyrocompasses. Wayne, N.J. Bureau of Naval Weapons.

—**Litton Systems, Inc., Guidance & Control Systems Div.**, Woodland Hills, Calif. $8,715,062. Inertial navigation systems. Woodland Hills, Calif. Bureau of Naval Weapons.

7—**Buxmont Ordnance Co., Inc.**, a subsidiary of the **J.W. Rex Co.**, Lansdale, Pa. $6,509,065. 250-pound bomb bodies. Berwick, Pa. U.S. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—**Bethlehem Steel Corp.**, Baltimore, Md. $32,247,000. Conversion of the USS CALOOSAHATCHEE (AO–98) and the USS CANISTEO (AO–99). Baltimore and Sparrows Point, Md. yards. Bureau of Ships.

—**Todd Shipyards Corp.**, San Pedro, Calif. $17,741,654. Conversion of the USS ASHTABULA (AO–51). San Pedro, Calif. Bureau of Ships.

8—**Magnavox Co.**, Ft. Wayne, Ind. $2,664,365. Sonobuoys. Ft. Wayne, Ind. Bureau of Naval Weapons.

—**Sun Shipbuilding & Dry Dock Co.**, Chester, Pa. $2,387,000. Construction of a conical shock tube facility at the U.S. Naval Weapons Laboratory, Dahlgren, Va. Bureau of Yards & Docks through the Dir., Chesapeake Div.

9—**Ling-Temco-Vought, Inc., LTV Vought Aeronautics**, Dallas, Tex. $1,833,000. Technical manuals to support A–7A aircraft. Dallas, Tex. Bureau of Naval Weapons.

—**General Electric Co., Heavy Military Electronics Dept.**, Syracuse, N.Y. $6,500,000. Modification kits (including drawings, technical manuals, and engineering services) for installation on sonar equipment aboard naval ships. Syracuse, N.Y. Bureau of Ships.

—**Hughes Aircraft Co.**, Culver City, Calif. $2,800,000. PHOENIX missile system. Culver City, Calif. Bureau of Naval Weapons.

13—**Lockheed Missiles and Space Co.**, Sunnyvale, Calif. $17,164,310. Project Definition Phase for POSEIDON missile system including the propulsion subsystem. Under this contract, **Aerojet-General, Corp.**, Sacramento, Calif., and **Hercules Powder Co.**, Baccus, Utah, will receive $4,163,219 and $4,446,505, respectively, as subcontractors. Sunnyvale, Sacramento, and Baccus. Special Projects Office.

—**General Electric Co., Ordnance Div.**, Pittsfield, Mass. $1,020,051. Project Definition Phase for fire control system for POSEIDON missile. The contract includes industrial support to the Massachusetts Institute of Technology for a guidance system for POSEIDON. Pittsfield. Special Projects Office.

—**Technical Material Corp.**, Mamaroneck, N.Y. $1,886,246. 62 items of spare parts for Navy communication systems. West Nyack and Mamaroneck, N.Y. U.S. Navy Purchasing Office, Washington, D.C.

—**Bendix Corp.**, Mishawaka, Ind. $1,450,000. Development, test, and evaluation effort on the TALOS missile program. Mishawaka. Bureau of Naval Weapons.

14—**Cessna Aircraft Co.**, Wichita, Kan., $1,024,823. Ejector pylon assemblies for fuel tanks on Navy and Air Force aircraft. Wichita. Bureau of Naval Weapons.

—**Honeywell Inc., Aeronautical Div.**, Minneapolis, Minn. $1,072,702. 52 items of spare parts for use in the S–2E TRACKER aircraft automatic pilot system. Minneapolis, Minn. U. S. Navy Aviation Supply Office, Philadelphia, Pa.

—**Peterson Builders, Inc.**, Sturgeon Bay, Wis. $1,973,676. Construction of six motor gun boats (PGM). Sturgeon Bay. Bureau of Ships.

15—**Aerojet General Corp.**, Azusa, Calif. $10,980,061. Procurement of MK46 torpedoes. Azusa. Bureau of Naval Weapons.

—**McLean Contracting Co.**, Baltimore, Md. $1,399,000. Construction of a ship berthing facility at the U.S. Naval Station, Charleston, S.C. Bureau of Yards and Docks through Director, Southeast Div.

16—**The Woods Hole Oceanographic Institution**, Woods Hole, Mass. $1,980,000. Research in oceanography. Woods Hole. Office of Naval Research.

—**Western Electric Co.**, New York, N.Y. $5,326,300. Oceanographic research. Whippany, N.J. U.S. Navy Purchasing Office, Washington, D.C.

19—**General Dynamics Corp., Pomona Div.**, Pomona, Calif. $2,192,845. Production of TARTAR and TERRIER missiles. Pomona. Bureau of Naval Weapons.

—**North American Aviation, Inc.**, Columbus, Ohio. $675,000. Program definition phase of CONDOR, a short range air-to-surface missile, planned for use with A–6A Intruder. Naval Ordnance Test Station, China Lake, Calif.

—**Northrop Corp., Nortronics Div.**, Hawthorne, Calif. $675,000. Program definition phase of CONDOR, a short range air-to-surface missile, planned for use with A–6A Intruder. Naval Ordnance Test Station, China Lake, Calif.

20—**United Aircraft Corp., Pratt and Whitney Aircraft Div.**, East Hartford, Conn. $5,739,897. TF–30 and J–52 engines. East Hartford, Conn. Bureau of Naval Weapons.

—**Westinghouse Electric Corp.**, Baltimore, Md. $4,500,000. Development effort related to the fleet ballistic missile system. Sunnyvale, Calif., and Baltimore, Md. Special Projects Office.

—**McDonnell Aircraft Corp.**, St. Louis, Mo. $482,142,000. Production of F–4D, RF–4C and RF–4B PHANTOM II aircraft for the Navy and Air Force. St. Louis, Mo. Bureau of Naval Weapons.

—**Peterson Builders, Inc.**, Sturgeon Bay, Wis. $4,956,000. Construction of four inshore minesweepers (MSI). Sturgeon Bay, Wis. Bureau of Ships.

—**United Aircraft Corp., Sikorsky Aircraft Div.**, Stratford, Conn. $1,269,266. Refurbishing and conversion of SH–3A helicopters to RH–3A configuration. Stratford, Conn. Bureau of Naval Weapons.

—**Bendix Corp., York Div.**, York, Pa. $1,213,250. Design and development for PHOENIX missile. York, Pa. U.S. Navy Purchasing Office.

21—**Sperry Gyroscope Co.**, Syosset, New York. $2,124,434. Inetrial navigation subsystem components for installation on nuclear powered Fleet Ballistic Missile submarines. Syosset. Bureau of Ships.

—**Collins Radio Co.**, Dallas, Tex. $3,874,206. Six communications sets and seven data terminal sets, installation with Naval Tactical Data System aboard naval ships. Cedar Rapids, Iowa, and Richardson, Tex. Bureau of Ships.

22—**Westinghouse Electric Corp.**, Baltimore, Md. $1,750,000. Components of radar sets for installation on RA-5C VIGILANTE attack aircraft. Baltimore, Md. U.S. Navy Aviation Supply Office, Philadelphia, Pa.

—**Columbus Milpar and Mfg. Co.**, Columbus, Ohio. $3,372,880. MK 14 bomb fins. Columbus, Ohio. U.S. Naval Ordnance Plant, Louisville, Ky.

—**Sparton Corp., Electronics Div.**, Jackson, Mich. $1,003,061 and $4,457,796. Sonobuoys. Jackson, Mich. Bureau of Naval Weapons.

26—**Sylvania Electric Products, Inc.**, Waltham, Mass. $2,526,910. Computer systems with components for installation aboard naval ships. Waltham, Mass. Bureau of Ships.

27—**Sangamo Electric Co.**, Springfield, Ill. $6,759,658. Sonar improvement kits for installation aboard surface ships. Springfield, Ill. Bureau of Ships.

—**Sanders Associates, Inc.**, Nashua, N.H. $1,633,974. Antennas for SHRIKE missile. Nashua, N.H. Bureau of Naval Weapons.

—**General Ships and Engine Works, Inc.**, East Boston, Mass. $1,357,992. Two landing craft, utility (LCU). East Boston, Mass. Bureau of Ships.

29—**Sunstrand Corp.**, Rockford, Ill. $8,157,680. Electrical equipment for F–4B and F–4C aircraft. Rockford, Ill. U.S. Navy Purchasing Office, Washington, D.C.

—**Magnavox Co.**, Fort Wayne, Ind. $1,443,469. Sonobuoys. Fort Wayne, Ind. Bureau of Naval Weapons.

—**Lasko Metal Products, Inc.**, West Chester, Pa. $3,340,562. SNAKE EYE bomb fins. West Chester, Pa. U.S. Naval Ordnance Plant, Louisville, Ky.

—**Hughes Aircraft Co.**, Culver City, Calif. $9,200,000. PHOENIX missile system. Culver City, Calif. Bureau of Naval Weapons.

30—**United Aircraft Corp., Pratt and Whitney Aircraft Div.**, East Hartford, Conn. $1,800,000. Spare parts for support of the TF30–P1 engine for the F–111 aircraft. East Hartford, Conn. U.S. Navy Aviation Supply Office, Philadelphia, Pa.

—**Bendix Corp.**, Mishawaka, Ind. $26,272,078. Production of TALOS missiles. Mishawaka-South Bend, Ind. Bureau of Naval Weapons.

AIR FORCE

1—**Northeast Construction Co. of West Virginia**, Albuquerque, N.M. $1,772,949. Construction of 109 family housing units at Holloman AFB, N.M. Air Force Missile Development Center (AFSC), Holloman AFB, N. M.

2—**Atlantic Research Corp., Propulsion & Chemical System Div.**, Alexandria, Va. $1,221,340. Meteorlogical rockets required for high altitude air weather test programs. Alexandria. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**Continental Aviation & Engineering Corp.**, Detroit, Mich. $2,396,697. Component improvement program for J–69 series engine. Detroit. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

5—**AVCO Corp.**, Stratford, Conn. $4,200,000. Component improvement program for T–53 series engine. Stratford. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—**Litton Systems, Inc., Guidance & Control Systems Div.**, Woodland Hills, Calif. $10,758,335. Spare parts for maintenance and overhaul of the F/RF–4C aircraft navigation system. Woodland Hills. Middletown Air Materiel Area (AFLC), Olmsted AFB, Pa.

6—**Kollsman Instrument Corp.**, Elmhurst, N.Y. $3,165,000. Mapping and survey systems. Elmhurst. Space Systems Div. (AFSC), Los Angeles, Calif.

7—**General Precision, Inc.**, Little Falls, N.J. $1,710,168. Conduct of a flight feasibility test program for a stellar inertial guidance system. Little Falls. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

8—**General Precision, Inc., Kearfott Div.**, Little Falls, N.J. $2,530,141. Spare parts for maintenance and overhaul of navigation equipment on C–141 aircraft. San Marcos, Calif. Middletown Air Materiel Area (AFLC), Olmsted AFB, Pa.

—**AVCO Corp.**, Stratford, Conn. $1,650,000. Development program of the T–53 series aircraft engine. Stratford. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

9—**United Electrodynamics, Inc.**, Pasadena, Calif. $1,363,532. Work on a classified project. Alexandria, Va. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—**Dow Chemical Co.**, Midland, Mich. $1,125,000. Development and evaluation of advanced solid propellants. Midland. Air Force Flight Test Center (AFSC), Edwards AFB, Calif.

12—**General Electric Co.**, West Lynn, Mass. $15,192,000. Production of J–85 turbojet engines. West Lynn. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**General Dynamics/Ft. Worth**, Ft. Worth, Tex. $45,000,000. Procurement of 10 F–111 aircraft and long lead time items to be used in 59 additional production aircraft.

14—**Lockley Machine Co.**, New Castle, Pa. $1,054,656. Production of practice bombs. New Castle. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

15—**Boeing Co.**, Seattle, Wash. $1,205,000. Continuation of research, development, test and evaluation work on the second through fifth MINUTEMAN wings. Seattle and at Patrick AFB, Fla. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

16—**Boeing Co.**, Wichita, Kan. $3,177,702. Modification of B–52 aircraft. Wichita. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—**Microwave Dynamics Corp.**, Mesa, Ariz. $1,277,000. Production of cartridge type engine starters. Mesa. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

19—**Lockheed Missiles & Space Co.**, Sunnyvale, Calif. $3,000,000. Engineering support for the AGENA booster system. Sunnyvale. Space Systems Div. (AFSC), Los Angeles, Calif.

—Sylvania Electric Products, Inc., Mountain View, Calif. $3,277,197. Spare parts for electronic data processing equipment. Mountain View. Warner Robins Air Materiel Area (AFLC), Robins AFB, Ga.

20—North American Aviation, Inc., Rocketdyne Div., Canoga Park, Calif. $2,422,000. ATLAS rocket engine propulsion systems. Canoga Park, Calif., and at Neosho, Mo. Space Systems Div. (AFSC), Los Angeles, Calif.

—Ryan Aeronautical Co., San Diego, Calif. $3,565,100. Aerial target drones. San Diego, Calif. Mobile Air Materiel Area (AFLC), Brookley AFB, Alabama.

21—Cornell University, Ithaca, N.Y. $1,480,537. Research in field of ionospheric physics. Ithaca, N.Y. and Arecibo, Puerto Rico. Air Force Office of Scientific Research, Washington, D.C.

—Martin Marietta Corp., Orlando, Fla. $2,249,463. Ground equipment for BULLPUP missiles. Orlando, Fla. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—Martin Marietta Corp., Martin Co., Div., Denver, Colo. $16,000,000. TITAN III X space boosters and associated equipment. Denver, Colorado. Space Systems Div. (AFSC), Los Angeles, Calif.

22—Bendix Corp., Teterboro, N. J. $1,722,035. Navigation computer sets for F-4C aircraft. Teterboro, N.J. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—Thiokol Chemical Corp., Bristol, Pa. $2,300,000. MINUTEMAN Stage I operational and flight test rocket motors. Brigham City, Utah. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

23—Lockheed Aircraft Corp., Marietta, Ga. $4,000,000. C-141 aircraft. Marietta, Ga. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—System Development Corp. Santa Monica, Calif. $1,600,000. Work in support of the satellite control system. Santa Monica, Calif. Electronic Systems Div. (AFSC), L.G. Hanscom Field, Mass.

28—Benson Manufacturing Co., Kansas City, Mo. $4,524,932. 650-gallon tank and pylon assemblies and related equipment for F-105 aircraft. Kansas City, Mo. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton, Ohio.

—North American Aviation, Inc., Autonetics Div., Anaheim, Calif. $1,707,184. Spare parts for MINUTEMAN missile airborne guidance and control systems. Anaheim, Calif. Ogden Air Materiel Area (AFLC). Hill AFB, Utah.

29—Lockheed Aircraft Corp., Marietta, Ga. $3,000,000. Procurement of C-130 aircraft and related equipment. Marietta, Ga. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Dayton. Ohio.

—Westinghouse Corp., Baltimore, Md. $920,000. Electronic equipment. Baltimore. Md. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Cardion Electronics, Inc., Westbury, N.Y. $1,985,781. Radar sets and decoder units. Westbury, N.Y. Electronics Systems Div. (AFSC), L.G. Hanscom Field, Bedford, Mass.

30—General Electric Co., Missile and Space Div., Valley Forge, Pa. $1,806,570. Design, development, test and production of a test satellite. Philadelphia, Pa. Space Systems Div. (AFSC), Los Angeles, Calif.

—Boeing Co., Seattle, Wash. $0,000,000. Modernization of MINUTEMAN missiles. Knob Noster, Mo. Ballistic Systems Div. (AFSC), Norton AFB, San Bernardino, Calif.

AFLC Announces AMA Phase Out Plan

The Air Force Logistics Command (AFLC) has announced detailed plans for the phasing out of logistics operations at two of its Air Materiel Area (AMA) installations—Middletown AMA, Olmsted AFB, Pa., and Mobile AMA, Brookley AFB, Ala.

The plan for each installation covers the relocation of specific logistics responsibilities and the approximate supporting personnel changes to take place from June 1965 through January 1966.

Initial details for the phasing out of a third installation, the San Bernardino AMA, at Norton AFB, Calif., are expected to be released in the near future.

This action is the first step in implementing the Secretary of Defense's directive of November 19, 1964, to close these AMA's during the period June 1965 to June 1969.

Following is a listing of transfers of AMA logistics responsibilities announced to date.

From Middletown AMA (during June 1965—January 1966):

To San Antonio AMA, Kelly AFB, Tex.:

- Materiel management and support for trainer aircraft and F-5, parachutes, flight clothing and Project Slow-Down.
- Procurement of recruitment advertising.

To Wright-Patterson AFB, Ohio:

- Procurement of contract technical support and special projects.
- Materiel management of Grant Aid (MAP) Control.

To Warner Robins AMA, Robins AFB, Ga.:

- Materiel management and support for cargo aircraft, helicopters, utility, O-1-P2-E aircraft.
- Maintenance for bomb navigation items (FSC 1280), area support, parachutes and flight clothing.

To Sacramento AMA, McCellan AFB, Calif.:

- Materiel management and support for T-39 aircraft.

To Ogden AMA, Hill AFB, Utah:

- Materiel management and support for photographic items. (FSC's PK 5900, 6710/20/30/40/60/80).
- Maintenance for RF-101 aircraft.
- Management Engineering Program Team (portion).

To Oklahoma City AMA, Tinker AFB, Okla.:

- Maintenance of J-79 engines, engine instruments (FSC 6620) and area support.
- Management Engineering Program Team (portion).

From Mobile AMA (during June 1965—December 1965):

To Sacramento AMA, McCellan AFB, Calif.:

- Materiel management and support for F-105 and F-84 aircraft.

To Warner Robins AMA, Robins AFB, Ga.:

- Materiel management and support for B-06, HU-16 aircraft and Q-2 drone.
- Supply distribution point for vehicle spares.
- Management Engineering Program Team (portion).

To Ogden AMA, Hill AFB, Utah:

- Maintenance for photographic items (FSC 6710/20/60).

To Wright-Patterson AFB, Ohio:

- Materiel management for Grant Air (MAP) Control.
- Management Engineering Program Team (portion).

To U.S. Navy:

- Overseas shipment of aircraft.

To Oklahoma City AMA, Tinker AFB, Okla.:

- Management Engineering Program Team (portion).

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Increased Dollar Returns Sought Through Market Research of Surplus

In an effort to provide complete information to meet buyers' specific needs and thereby widen the range of civilian and industrial use of DOD surplus, three market research study groups at the Defense Logistics Services Center (DLSC), Battle Creek, Michigan, are studying problems involving the merchandising of high-volume surplus defense items which normally produce low rates of return.

The object is to provide prospective buyers better service, more product data, including application data to meet their specific needs. The result is expected to be higher dollar returns for the Government.

DLSC is a major field activity of the Defense Supply Agency. It has as one of its responsibilities the surplus personal property disposal program.

The study groups are concentrating on a varied list of commodities. Included are motor vehicles, trailers and cycles, tractors, vehicular equipment components, engine accessories, maintenance and repair shop equipment, aircraft components and accessories, communications equipment, electrical and electronic components, electric wire, power, and distribution equipment, and instrument and laboratory equipment.

The studies will produce advice and marketing aids for the Defense Surplus Sales Offices, which are managed and operated by DLSC. These aids provide guidance in segregating, lotting, describing and identifying items of surplus property. They indicate those items containing precious metals, those which bring a reasonable rate of return and should be considered for sale as usable items and, conversely, those that are to be considered for direct scrapping.

Other instructions provide automotive classification code numbers for use in properly describing automotive equipment, or provide standard abbreviations for electronic terms.

Tips are given on merchandising electron tubes which would have special appeal to certain markets. A cross-reference listing, for example, shows American substitutes for European tubes and American-European exact replacements for European tubes. The listing serves to identify tubes by European markets, by export markets and by dealers of imported electronic equipment in the United States.

CAS Region to be Established in Dallas

The third Defense Contract Administration Services (CAS) Region will be established in Dallas, Tex., on June 1, 1965.

The new region headquarters will be located at 500 S. Ervay Street, in Dallas. There will be five subordinate offices in Texas —an area office in San Antonio and plant offices at Texas Instruments, Inc., and Collins Radio Co., in Dallas; at Rocketdyne, in McGregor; and at Ling-Temco-Vought, Inc., in Greenville. An area office will be opened in Oklahoma City, Okla., and a plant office at Douglas Aircraft Co., Inc., in Tulsa, Okla.

The Dallas CAS Region will perform contract administration on defense contracts in Arkansas, Louisiana, New Mexico, Oklahoma and Texas.

The principal existing organizations being consolidated are the Air Force Contract Management District in Dallas, together with its offices in Greenville, McGregor and San Antonio, Tex., and Tulsa, Okla.; the Army Branch Office of the St. Louis Procurement District, in Dallas; the Navy Inspector of Naval Material, in Dallas; and several offices of the military services and the Defense Supply Agency.

Colonel Charles F. Burley, USAF, will be the Director of the new region.

DEFENSE INDUSTRY

BULLETIN

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The purpose of the *BULLETIN* is to serve as a means of communication between the Department of Defense (DOD) and its authorized agencies and defense contractors and other business interests. It will serve as a guide to industry concerning official policies, programs and projects, and will seek to stimulate thought by members of the defense-industry team in solving the problems that may arise in fulfilling the requirements of the DOD.

Material in the *BULLETIN* is selected to supply pertinent unclassified data of interest to the business community. Suggestions from industry representatives for topics to be covered in future issues should be forwarded to the Business & Labor Division.

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Col. R. A Scurlock, USAF

New ASPR Chairman

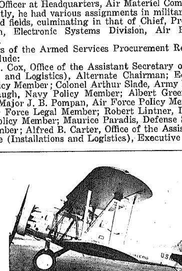
Colonel Reagan A. Scurlock, USAF, has assumed the duties of Chairman of the Armed Services Procurement Regulation Committee in the Office of the Assistant Secretary of Defense (Installations and Logistics). He succeeds Colonel Roger H. Terzian, USAF, who has returned to the Air Staff.

The Armed Services Procurement Regulation Committee is composed of representatives of the Office of the Secretary of Defense, Army, Navy, Air Force and Defense Supply Agency. It is responsible for developing and maintaining uniform policies and procedures for the procurement of all defense supplies and services. It also prescribes standard contract forms and clauses used in military contracts.

Colonel Scurlock is a graduate of the University of Texas Law School and a member of the Texas Bar. He was assigned as Procurement Officer at Headquarters, Air Materiel Command, in 1951. Subsequently, he had various assignments in military procurement and related fields, culminating in that of Chief, Procurement and Production, Electronic Systems Division, Air Force Systems Command.

Members of the Armed Services Procurement Regulation Committee include:

Louis A. Cox, Office of the Assistant Secretary of Defense (Installations and Logistics), Alternate Chairman; Edward C. Cox, Army Policy Member; Colonel Arthur Slade, Army Legal Member; LeRoy Haugh, Navy Policy Member; Albert Green, Navy Legal Member; Major J. B. Pompan, Air Force Policy Member; Edmund Kelly, Air Force Legal Member; Robert Lintner, Defense Supply Agency Policy Member; Maurice Paradis, Defense Supply Agency Legal Member; Alfred B. Carter, Office of the Assistant Secretary of Defense (Installations and Logistics), Executive Secretary.



The Original Corsair?

The story on page 5 of the April *Bulletin* identified the F4U, a gull winged, World War II and Korean conflict fighter, as the original Corsair.

However, one of our readers took exception to our claim and sen the picture above of the 02U Corsair, which saw service in the 1930's, to prove it.

Our thanks to Mr. John F. McCauley, of Motorola, Inc., for the correction and the photo.

Corsair historians with pictures of even earlier models are invited to submit them.

The Editors.

Major Crossroads in the Space Program

by

Major General Don R. Ostrander, USAF

America's space program today is at, or is rapidly approaching, some major crossroads in decision making. Before too many more weeks have slipped by us we are going to have to face up to the problems of where to go and how much to spend getting there.

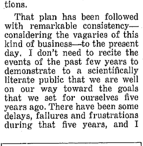
Of course, the situation is not new in our business—it has been occurring, off and on, since 1957. But it seems to me that within a very short time we—and by *we* I mean all of us associated with the space program—are going to be faced with an unusually large number of these decisions—major decisions that will affect those involved in the space program in industry, Government and education as well as the military.

This is what I would like to deal with in this article. I would like for you to consider with me what the alternatives are, what kinds of decisions we will be required to make and what kinds of information we will need if we are to make those decisions sensible and profitable.

I want to start by making a few comments about the civilian side of our Federally-supported space program, the National Aeronautics and Space Administration. Before I comment, however, I must, in all fairness, explain that I am speaking essentially as a layman. Since leaving my assignment with NASA in 1961 I have not participated directly in the NASA programs or planning process—although I have had and still have a number of close relationships with the agency—and I must ask you to accept my observations in that light.

Although NASA has engaged in a great deal of serious and conscientious planning, study and analysis from virtually the first day it was formed, it was not until 1960 that a really definitive and generally accepted, long-range plan emerged under the guidance of Homer Joe Stewart. The main thrust of that plan was toward a manned lunar landing, backed up with a broad spectrum of scientific experimentation, technological development and space applications.

That plan has been followed with remarkable consistency—considering the vagaries of this kind of business—to the present day. I don't need to recite the events of the past few years to demonstrate to a scientifically literate public that we are well on our way toward the goals that we set for ourselves five years ago. There have been some delays, failures and frustrations during that five years, and I don't want to imply that there aren't a great many difficult problems ahead of us. But by and large they are engineering problems, rather than fundamental dilemmas with no solution in sight.



Maj. Gen. Don R. Ostrander, USAF, has been Commander of the Air Force's Office of Aerospace Research (OAR) since Sept. 1962. Prior to this assignment, as Director of Launch Vehicles for NASA from Dec. 1959 to Sept. 1962, he was in charge of NASA booster development and launching operations. A graduate of the U. S. Military Academy, General Ostrander has been active in the direction of Air Force research & development programs over the past 15 years.

But after we have landed a man on the moon, where do we go from there? Do we continue with scientific exploration of the moon? Do we establish a colony there and shuttle scientists back and forth? Do we shift our attention to one of the nearer planets—probably Mars? Do we drop back to near-Earth space and attempt to further refine and consolidate and apply our knowledge? Do we place greater emphasis on *scientific* or upon *technological* and *engineering* progress?

I recognize that we will probably do some of all of these things. I recognize, too, that there are a great number of extremely competent and knowledgeable people engaged in trying to decide just how many of these programs we should support, in what proportion, and in which order. All I am trying to do here is emphasize the fact that there are a very large number of interesting and promising paths that we *can* take, and that the decision on which direction we go is not going to be easy, nor can it be made lightly.

In our military space program, it seems to me that we are rapidly approaching—if we haven't already arrived at—an equally critical period.

There are a great many people in the military who have been thinking about military missions in space since at least the early 1940's. Stimulated to some extent by the German scientists and engineers who had been involved in the German missile program, we were intrigued by the potentialities of rocket propulsion. It seems to me, as I look back, that in those days, during the 1940's and 1950's, we spent as much or more time thinking about space exploration as we did about immediate military applications. There were several reasons for this—no doubt the glamour and excitement of space exploration played its part—but mainly, I think, because the art of nuclear weaponry had not yet progressed to the point where long range ballistic missiles appeared to be feasible; and since propulsion has always been simultaneously the key and the bottleneck to greater aircraft performance, when handed an improvement in propulsion, we in the Air Force almost instinctively thought in terms of flying further, higher and faster. Consequently, space exploration seemed the logical way to go.

But about that time came the thermonuclear breakthrough, and it became rapidly apparent that there was a more immediate pay-off from our efforts in the rocket propulsion field. The Air Force mounted a tremendous, massive, all-out effort to attack the scientific, engineering, site activation and operational problems of developing and fielding a ballistic missile force. And so much of our talent, time and money were devoted to this task that, relatively speaking, we had little left to spend in pursuit of possible military applications in space.

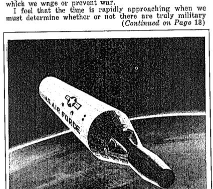
In the meantime, NASA was formed and was charged by Congress to achieve certain national objectives. These were: "(1) to conduct the scientific exploration of space for the United States, (2) to begin the exploration of space and the solar system by man himself and (3) to apply space science and technology to the development of earth satellites for peaceful purposes to promote human welfare."

But Congress stated a fourth national objective, which was assigned to the Defense Department. It was, "to apply space science and technology to military purposes for national defense and security." It is this objective which, as an Air Force officer, naturally concerns me most; but, I think, more and more it must concern us all.

It seems to me that so far in the military space program we have been exploiting the obvious and solving what may prove to be, comparatively speaking, the easy problems. We have adapted and applied many of the techniques we learned in our ballistic missile program, and from many of NASA's programs, to perform a number of peripheral, or supporting missions—as opposed to purely military missions—that in some situations we can do better in space than we can from the ground; for example, such things as communications, navigation, geodesy and weather forecasting. There is nothing wrong with this approach—certainly you do those things that you know how to do—but none of these has had a direct or profound impact on our military strategy, or upon the ways in which we wage or prevent war.

I feel that the time is rapidly approaching when we must determine whether or not there are truly military

(*Continued on Page 13*)



Artist's Concept of Manned Orbital Laboratory (MOL).

Patents, Proprietary Rights and Military Exports

by

Mr. Ralph H. Jefferson
Office of the Asst. General Counsel
(International Affairs)
Office of the Secretary of Defense

What have patents and proprietary rights got to do with military exports? The question is a reasonable one, for the latter term is most commonly understood in terms of sales of weapons, equipment and other hardware as such. In such transactions the question of ownership of the "industrial property" rights in the items will often be of little consequence. However, when a foreign government, while interested in a particular weapon or military item of United States origin, is unable or unwilling to purchase such item outright from United States sources, the subject of proprietary rights immediately takes on increased importance. It is a fair assumption that in coming years foreign governments will, for a variety of reasons, desire to have their own industries play a greater role in satisfying their defense requirements. They are likely to favor, increasingly, arrangements such as co-production of an item, involving participation by manufacturers in both countries, or straight licensed production in the foreign country. Both of these methods—as well as other variants—bring in their train all the problems regarding patents and proprietary rights which are necessarily involved in the transfer abroad of U. S. military technology.

It is therefore not surprising that in the last year or two increased attention has been focused upon the subject of "rights" as they relate to the basic goals of the United States military export program. Simply put, the question is: what is the best division of rights, as between the Defense Department and its contractors, in inventions and technical data and information resulting from research and development work performed under Defense contracts?

The answer is not an easy one. A definitive answer would logically depend in part upon a precise division of responsibilities between the Government and industry for carrying out the military export program. Unfortunately, precision in this regard is unattainable—and understandably so—in so complex and dynamic a program. We must be content with the more general assumption that, barring some drastic change in philosophy, both Government and industry have indispensable roles to perform if the export program is to enjoy continued success. The task, then, is to ensure that to the fullest extent possible the Defense Department's patent and data procurement policies respond to the needs of both Government and industry in fulfilling their respective roles.

With respect to patent policy, defense industry representatives have urged with considerable force that the Government should not under any circumstances deprive U. S. companies of the "rights" they need in order to enter into favorable licensing or co-production arrangements with foreign firms. When the patent policy section of the Defense Department's Armed Services Procurement Regulation was revised in the spring of 1964 to reflect the policy enunciated in a Presidential memorandum of October 1963, it was feared by some that the revision would result in a wholesale swing to "title-taking" by the Government. If the Defense Department took "title" to most inventions made under its research and development contracts, it was said, U. S. firms would be either unable, or—lacking incentive, unwilling—to obtain foreign patent protection; they would have less to license abroad, and no ready means of protecting what they did license; and foreign governments would be able to exploit freely the inventions in question without any benefit accruing to either the U. S. Government or industry.

The result feared was definitely not the one intended by the ASPR revision. To remove any possible doubts, a clarifying memorandum and some further revisions were issued in November of last year. These steps served to ensure that proper recognition would be given, in de-

(*Continued on Page 24*)

Appropriation of $700 Million Provides Added Insurance to U.S. Fighting Man in Southeast Asia

Expenditures which will assure "a position of plenty—militarily" for U. S. Forces in South Vietnam were described by Secretary of Defense Robert S. McNamara in a memorandum released May 18 by the White House to explain how the $700 million emergency supplemental appropriation for Southeast Asia will be spent. In releasing the memorandum the President said:

"As I have stated on numerous occasions, the entire resources of the Federal Government are available to assist our men in South Vietnam. Our soldiers, sailors and airmen have a blank check for the equipment they need to assist the South Vietnamese. We seek no wider war, but so long as American men are in South Vietnam, they shall have the very best support that this country can give them. The speedy action by the Congress on this appropriation is a testament to the support our men have from the American people."

The memorandum from the Secretary of Defense follows:

"You asked the Congress on May 4 to appropriate an additional $700 million to meet mounting military requirements in Vietnam. Two days later Congress passed and sent you an additional appropriation for that amount as an emergency fund for Southeast Asia.

"When you approved this appropriation on May 7, you said 'This money will be spent for arms, for weapons of war, for helicopters, for ammunition, for planes, not because we want war, but because the aggressors have made them necessary.' . . .

"While our inventory for combat consumables, tactical aircraft and helicopters has been substantially increased, as the House Committee on Appropriations said on May 5 in reporting out the $700 million supplemental appropriation favorably, 'a position of plenty—militarily—is to be desired in the light of world conditions.'

"To provide added insurance for our forces in Vietnam and to assure that we continue our 'position of plenty,' we intend to allocate the $700 million as follows:

	Army	Navy	Air Force	Total
Procurement of Ammunition & Ordnance	$117.9	$135.9	$115.0	$368.8
Operations & Maintenance Expenses	46.6	56.2	49.8	152.6
Military Construction Projects	44.8	22.0	41.0	107.8
Procurement of Aircraft	8.7	32.0	14.0	54.7
Other Operating Items	—	4.9	11.2	16.1
Total	$218.0	$251.0	$231.0	$700.0

"Procurement of Ammunition and Ordnance—$368.8 Million. Although the consumption rate of combat supplies in Vietnam is still quite small in relation to our current inventories and to projected deliveries from future production, we believe it is prudent at this time to replace the stocks now being consumed in order to ensure that the planned build-up of our war reserve inventories continues. Accordingly, the $368.8 million will be allocated to the procurement of those ammunition and ordnance items which are being consumed in Vietnam. Included in this category are 2.75 air-to-ground rockets, 7.62 mm and 20 mm cartridges, a variety of modern, aircraft-delivered bombs, aircraft flares and other illuminating devices, bomb racks, gun pods and ordnance handling equipment.

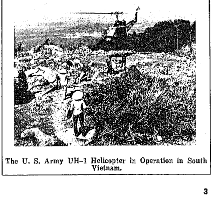
"Operations and Maintenance Expenses—$152.6 Million. This money will be used to defray the costs of moving U. S. forces and their equipment and supplies to Vietnam and to support the increased overhaul and maintenance loads (including the procurement of additional spare parts) growing out of the more intensive use of and combat damage to aircraft and other equipment deployed in Vietnam.

"Military Construction Projects—$107.8 Million. This money will be devoted to the construction of additional facilities required to support the expansion of U. S. military forces in Southeast Asia and to protect our men and equipment there. Facilities must be provided for the growing number of U. S. military personnel in that area and warehouses, shops and repair facilities must be constructed for the supplies and equipment. Port facilities and airfields must be improved to accommodate the increased flow of materiel and the growing number of combat aircraft. Additional petroleum storage, transportation and dispensing facilities must be provided for the increased inventories of aircraft and the higher levels of operations. This money will also be used to construct hospitals to serve our men in South Vietnam.

"Procurement of Aircraft—$54.7 Million. Aircraft attrition rates in Southeast Asia have been lower than the attrition rates during World War II and the Korean conflict and they are quite modest when compared with current inventories and production rates. Nevertheless, it would be prudent at this time to make the necessary preparations for higher production rates of selected aircraft should such production rates be required in the future. Accordingly, $5.7 million will be utilized for the procurement of long lead-time components for such aircraft as the UH-1B helicopter, the F-4 fighter/bomber and the TA-4E fighter/bomber. The TA-4E aircraft are being procured to replace the A-4Es now being used by the Navy for training purposes. The acceleration of this program would release additional A-4Es for South Vietnam, if such aircraft are needed there.

"Other Operating Items—$16.1 Million. The balance of the $700 million—$16.1 million—is required for a variety of other operating items, including some small, fast patrol boats, special tropical gear, communications equipment, etc.

"The allocation of the $700 million as I have described will, in my judgment, fully meet our essential short-range needs. Nevertheless as you noted in your message to the Congress on May 4, no one can guarantee that 'this will be the last request'. I will continue to keep the situation in Vietnam under constant review and I will advise you of any additional needs in funds or equipment as soon as such needs arise. As you know, we have given our forces in South Vietnam first call on any of the resources of the Department of Defense."



The U. S. Army UH-1 Helicopter in Operation in South Vietnam.

Guidelines for Developing and Submitting Unsolicited Proposals U.S. Navy

Criteria for Determining Whether to Submit a Proposal.

Before any kind of a document is prepared in submitting an unsolicited proposal, consideration should be given to what might be called the "pre-proposal" stage of the operation. Since at this stage there is no certainty that financial support is forthcoming, it is appropriate that any preparatory work be limited to an effort which will require a minimum expenditure of funds. What should this effort encompass? First, the company should sort out the obvious technical barriers in its proposal and attempt to acquire sufficient technical data to indicate that they are subject to solution. On occasion, a company may propose research or development of an invention conceived independently of a Government contract but not yet actually reduced to practice (i.e., actually built and tested). If so, consideration should be given to the rights in the invention which the Government will acquire if the invention is reduced to practice under a contract. At the least, the contract will require the grant, to the Government, of a royalty free license to use the invention for governmental purposes. In some circumstances greater rights (including in some cases the grant of outright ownership) may be required.

Preparation of Preliminary Proposal.

After the prospective contractor has assembled enough information to adequately describe a new or novel concept to indicate the approach necessary to solve the obvious technical problems and, if possible, to describe the ultimate military application, he is ready to prepare a preliminary proposal. The Office of Naval Research (ONR) publication, "Contract Research Program (ONR-1)," provides a guide for the preparation of research proposals. The proposal guide therein was primarily designed for basic research; however, the general guidelines are also suitable for applied research/exploratory development. A more specific guide for applied research/exploratory development proposals might be:

1. One-page summary statement of the proposed work.
2. A definition of the military application or field of interest and some indication of performance increases which might result.
3. A summary of the state of the art in the area.
4. A reasonably complete technical description of the proposed work, including a specific work statement and relationship of the proposed work to other work in the same field.
5. Name(s) and background of principal investigator(s) and associate(s).
6. Estimated duration of project and yearly budget; including an estimate of cost of capital equipment and expendable supplies.
7. Facilities required and knowledge of availability.
8. Other Government-sponsored work in the same area being undertaken by the activity.

The preliminary proposal should, in general, follow the format described above with the exception that at this stage detailed information is not necessary for sections 6, 7, and 8.

Processing a Preliminary Proposal.

The next step in processing a preliminary proposal is to determine the agency and individuals in that agency who might have an interest in the proposal. ONR has prepared a publication entitled "The Office of Naval Research Contract Research Program," which gives a general outline of the many scientific disciplines of interest to the ONR. The booklet also contains addresses and telephone numbers of the field organizations of the ONR. From these, one can obtain the names and telephone numbers of the particular scientist that would have cognizance of a field of interest. If the telephone inquiry suggested should fail to provide the necessary information, there is a "Directory of Navy Small Business Personnel," which contains the names, addresses and telephone numbers of all Navy Small Business Specialists. These people are familiar with the total Navy picture and may be of assistance in establishing the initial contact. In the event basic research or development work is not involved in the proposal, there is a publication entitled "Selling to the Military" which lists all of the military establishments that generate requirements of any nature.

The next decision to be made is whether the preliminary proposal should be mailed to a Navy agency or a personal contact made to discuss the document. If it is at all possible, it is more advantageous to make one or more personal contacts to discuss the proposal with interested individuals. The conversation type proposal discussion makes it possible to obtain detailed comments and suggestions which are difficult or impossible to incorporate in correspondence.

One source of discouragement to the prospective contractor is the referral from one office to another in the search for the office or individual who is interested in the area covered by his proposal. This is often referred to as the "bureaucratic runaround" by individuals who don't understand the problem. The Navy and other military departments are large, complicated organizations consisting of central and field activities with various responsibilities and interests. The prospective contractor should accept the fact that in many cases it will require some effort to locate the office or individual who is in a position to evaluate his preliminary proposal.

In any review of a preliminary proposal, either by correspondence or office discussion, the prospective contractor should carefully note any specific technical objections or reference to lack of military application. It is usually pointless to prepare a final proposal if it does not contain sufficient information to contradict to some degree the objections noted above. Preliminary discussions often reveal information which may make it advantageous for the prospective contractor to slightly alter his original concept so that his work will more nearly conform with a military requirement of which he was originally unaware.

Submission of a Formal Proposal.

After the preliminary proposal has been thoroughly reviewed the prospective contractor has to evaluate the results of this review to determine if he should submit a formal proposal. Many important questions must now be answered. Was there sufficient interest to justify the expense of a formal proposal? If the reviewing office indicated an interest, was there any reason to suppose that funds were available to support such an effort? Did the reviewing office suggest that the submission be delayed until the next fiscal year when funds would be available? If the concept has a military application, should it be submitted to the Navy Department or some other military department?

If the prospective contractor has now made a decision to submit a formal proposal, it is often satisfactory to use the preliminary proposal as the basic structure which is embellished with additional details. Excellent features of an unsolicited proposal may receive little attention if the technical information and format are not adequate to convince the prospective customer that the proposal is worthy of acceptance.

Navy Evaluation of an Unsolicited Proposal.

Let's be more specific about the factors which influence the acceptance of a proposal; one of these is the arrangement of technical groups within a research organization. Scientific disciplines are well defined and an unsolicited proposal for basic research in a scientific area is usually reviewed by an investigator who is trained in the related discipline. This arrangement assists in processing basic research proposals. Occasionally, interdisciplinary proposals make their appearance but they are the exception

(*Continued on Page* 21)

World-Wide Communications "In Seconds"

by

Maj. Gen. Richard J. Meyer, USA

Maj. Gen. R. J. Moyer, USA
Commanding General
U. S. Army Strategic
Communications Command

communications art today is in the midst of a vast
ion and expansion of user demands as well as of
ent development—a communications revolution and
ion that will change our entire way of living and
g in the very near future.
he tempo of our world steps up, the Army changes
sponding to the shock waves of evolution and revo-
not least in communication matters. Recently, very
changes have renovated the communications-
nics organization of the U. S. Army.
March 1, 1964 the U. S. Army Strategic Communica-
Command (STRATCOM) was created in order to
l Army strategic communications nets and opera-
oops, wherever they may be in the United States or
as, under one single major field command of the
Its mission: to manage, control and operate the
s portion of the Defense Communications System
world-wide, and to serve as the single point of
t between the Defense Communications Agency
) and the Army.
y's Army is a world-deployed force. Its troops are
ned in force in overseas areas around the globe.
the continental United States combat contingency
are ready in two corps to move rapidly to any
ve area—either as part of Strike Command or as a
ral organization to undertake a special mission.
ATCOM has supported exercises of the Strike
and in many areas—for example, in California last
n exercise DESERT STRIKE, where an air-trans-
le troposcatter radio system was furnished, provid-
communications channels in 100-mile relay jumps.
TCOM also conducted successful satellite voice
nications tests from Dallas, Tex., through the
operated ground satellite communications station
np Roberts, Calif., up to the SYNCOM II satel-
d back down to a transportable satellite ground
serving STRICOM. Thus, in a matter of hours,
distinct media of voice and records communications
ely, troposcatter, satellite and high frequency air
ortable radio—were all employed, demonstrating
TCOM's capability of supporting a commander with
ile, responsive, long-range communications.
ATCOM headquarters exerts direct control over all
ic communications troops around the world. Con-
exercised through five regional sub-commands:
S, Pacific, Europe, Mid-East and South. The first
ub-commands are well implemented now. The fifth,
TCOM-South, is the newest major sub-command.
established on the first day of February 1965 by
ting a field office in Panama through which
STRATCOM supervised installations that were recently set up in a number of Central and South American countries.

Already STRATCOM's global responsibilities involve the command with a working force of at least 11,000 military and civilians in the United States and in more than 30 nations overseas.

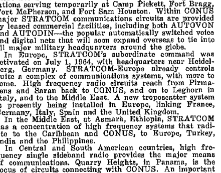
Headquarters of the STRATCOM-CONUS subordinate command is located near Washington, at Suitland, Md. CONUS controls single sideband high frequency radio systems that connect with major countries overseas (supplemented by leased cable facilities to Europe, Latin America and Hawaii). CONUS possesses major modern relay centers, such as the East Coast Relay, a fully automatic message switch at Ft. Detrick, Md. STRATCOM has two other similar automatics: one at Ft. Leavenworth, Kan., and the other at Davis, Calif. In addition, there are a number of older, torn-tape switching installations serving temporarily at Camp Pickett, Fort Bragg, Fort McPherson, and Fort Sam Houston. Within CONUS major STRATCOM communications circuits are provided by leased commercial facilities, including both AUTOVON and AUTODIN—the popular automatically switched voice and digital nets that will soon expand overseas to tie into all major military headquarters around the globe.

In Europe, STRATCOM's subordinate command was activated on July 1, 1964, with headquarters near Heidelberg, Germany. STRATCOM-Europe already controls quite a complex of communications systems, with more to come. High frequency radio circuits reach from Pirmasens and Saran back to CONUS, and on to Leghorn in Italy, and to the Middle East. A new troposcatter system is presently being installed in Europe, linking France, Germany, Italy, Spain and the United Kingdom.

In the Middle East, at Asmara, Ethiopia, STRATCOM has a concentration of high frequency systems that radiate to the Caribbean and CONUS, to Europe, Turkey, India and the Philippines.

In Central and South American countries, high frequency single sideband radio provides the major means of communications. Quarry Heights, in Panama, is the focus of circuits connecting with CONUS. An important additional communications facility in the area is a multi-

(*Continued on Page* 14)



Operations Area of the U. S. Army. ACAN Transmitter Primary Communications Station.

DOD Establishes Program for Improved Managment of Support Services

Secretary of Defense Robert S. McNamara has approved the recommendations of a special study intended to improve the management of the $8 billion the DOD spends annually for support services, which includes dozens of varied functions from housekeeping services to the overhaul of combat vehicles. These services are performed by DOD personnel and on the basis of commercial or industrial contracts.

When the study was initiated on September 11, 1964, Secretary McNamara directed the study group to:

> "Determine where greater use of contractual support would be a more economical means of performing commercial and industrial-type functions which are available on a competitive basis from private enterprise.
>
> "Determine where the use of contract support should be terminated because the cost of such service is in excess of that of performing the service internally, or because the use of contract support may be inconsistent with military readiness objectives, or civil service laws and regulations."

The study was directed by a steering group, chaired by the Assistant Secretary of Defense (Installations & Logistics) and with other Assistant Secretaries and high Defense officials as members. Representatives of the Bureau of the Budget and the Civil Service Commission participated in steering group meetings. The staff which conducted the study consisted of military and civilian personnel from each of the Military Departments, under the leadership of Mr. Robert C. Moot, Acting Deputy Assistant Secretary of Defense for Logistics Services.

The first recommendations to be carried out involve the use of contract technical personnel services. The study concluded that the objectives of improved military readiness and economy can both be realized by a change in management approach. In particular, an immediate need exists to eliminate the use of contract technical personnel when such use is inconsistent with civil service laws and regulations.

Contract technical personnel are employees of industrial or commercial organizations who assist Defense personnel in the operation, maintenance and training requirements for weapons, equipment and systems. The study identified 7,000 man-years of technical personnel services at an annual cost of approximately $117 million. To the extent that such personnel become, in practice, a part of the Defense work force under the supervision of Defense personnel, their use is inconsistent with civil service laws and regulations which prescribe when Federal positions should be staffed through normal civil service procedures for filling Government jobs. Consequently, the Military Departments are now preparing detailed plans for the orderly conversion of contractual technical support effort to DOD in-house effort in cases where it is necessary or desirable to do so.

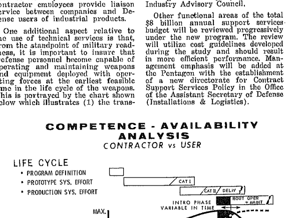
This conversion effort will not terminate the essential flow of technical data from Defense users to producers of equipment which is so necessary to future product improvement and performance analysis during the early operational phase of newly delivered equipments. Likewise, the recommendations of the report do not apply to field service representatives who as contractor employees provide liaison service between companies and Defense users of industrial products.

One additional aspect relative to the use of technical services is that, from the standpoint of military readiness, it is important to insure that Defense personnel become capable of operating and maintaining weapons and equipment deployed with operating forces at the earliest feasible time in the life cycle of the weapons. This is portrayed by the chart shown below which illustrates (1) the transmittal of technical know-how from producer to user during the life cycle of equipments and (2) the augmentation of Defense in-house employment levels by the use of contract technical personnel. The chart provides a clear vehicle for posing the two questions which were considered in the study, i.e., (1) the management question as to when the cross-over should occur between user capability and contractor capability and (2) the legal question of the propriety of adding contractor personnel to Defense personnel at on-site Defense installations under Defense supervision for the purpose of maintaining, operating and instructing on the use of installed Defense equipments.

Secretary McNamara has directed that industry representatives be given an opportunity to review and comment upon applicable Defense directives and regulations concerning the use of contract technical personnel prior to their issuance, including continuing monitorship by the Defense Industry Advisory Council.

Other functional areas of the total $8 billion annual support services budget will be reviewed progressively under the new program. The review will utilize cost guidelines developed during the study and should result in more efficient performance. Management emphasis will be added at the Pentagon with the establishment of a new directorate for Contract Support Services Policy in the Office of the Assistant Secretary of Defense (Installations & Logistics).

COMPETENCE - AVAILABILITY ANALYSIS
CONTRACTOR vs USER



DEPARTMENT OF DEFENSE

Brig. Gen. James H. Weiner, Asst. Dep. Dir., Defense Communications Systems, Defense Communications Agency, has been assigned as Chief of Staff, Defense Communications Agency.

RAdm. John E. Dacy, USN, has been designated Senior Navy Member, Military Studies & Liaison Div., Weapon Systems Evaluation Group, replacing **RAdm. Edward J. O'Donnell**, USN.

ARMY

Lt. Gen. Bruce Palmer, Jr., Dep. Chief of Staff for Military Operations, has been assigned as Commanding General, XVIII Airborne Corps, Ft. Bragg, N.C. He succeeds **Lt. Gen. John W. Bowen.**

Maj. Gen Vernon P. Mock, Secretary of the General Staff, has been nominated for promotion to lieutenant general and assigned as Dep. Chief of Staff for Military Operations.

Lt. Gen. Charles W. G. Rich, Commanding General, Third U.S. Army, has been named Dep. Commanding General, Eighth U.S. Army, Korea. His successor as Commanding General, Third U.S. Army, is **Lt. Gen. Louis W. Truman**, formerly Commanding General, VII Corps, U.S. Army, Europe.

NAVY

RAdm. Herschel J. Goldberg became Chief of the Bureau of Supplies & Accounts and Paymaster General of the Navy on April 30.

RAdm. Edward E. Grimm, Dep. Dir. for National Military Command Center, J-3, Joint Staff, JCS, has been assigned as Asst. Comptroller, Dir., Budget & Reports. He succeeds **RAdm. Fred E. Bennett.**

Maj. Gen Alpha L. Bowser, Commanding General, Marine Corps Base, Camp Lejeune, N.C., has been nominated for promotion to lieutenant general and assigned as Commanding General, Fleet Marine Force, Atlantic. He succeeds **Lt. Gen. James P. Berkeley**, who is retiring.

Enterprise and Bainbridge Change Home Ports in October

Two of the Navy's three nuclear powered surface ships will change their home ports later this year.

The attack carrier ENTERPRISE and the guided missile frigate BAINBRIDGE are scheduled to be homeported in Alameda and Long Beach, Calif., respectively, commencing October 1.

The present home port of the ENTERPRISE is Norfolk, Va. The BAINBRIDGE is now homeported in Charleston, S. C.

Maj. Gen. Richard C. Mangrum, Dir. of the Marine Corps Educational Center, Marine Corps Schools, Quantico, Va., has been nominated for promotion to lieutenant general and assigned as Asst. Commandant of the Marine Corps. He succeeds **Lt. Gen. Charles H. Hayes**, who is retiring. **Maj. Gen. Paul J. Fontana** is Gen. Mangrum's successor as Dir. of the Marine Corps Educational Center, Marine Corps Schools.

RAdm. Bernord F. Roeder, Asst. Chief of Naval Operations (Communications/Dir. of Naval Communications) has been nominated for promotion to vice admiral and assigned as Commander, Amphibious Force, Pacific Fleet, succeeding **VAdm. John B. Colwell.**

The following general officers of the Marine Corps have received new assignments as indicated below:

Brig. Gen Raymond G. Davis as Asst. Chief of Staff, G-1; **Brig. Gen. Keith B. McCutcheon** as Commanding General, First Marine Aircraft Wing; **Maj. Gen. Herman Nickerson, Jr.**, as Commanding General, Marine Corps Base, Camp Lejeune; and **Brig. Gen. Ormond R. Simpson** as Commanding General, Second Marine Division.

RAdm. Edward J. O'Donnell, formerly Senior Navy Member, Military Studies & Liaison Div., Weapons Systems Evaluation Group, has been assigned as Superintendent, U.S. Naval Postgraduate School, Monterey, Calif.

AIR FORCE

Mr. Ralph R. Harding, former U.S. Representative of the 2nd District of Idaho, has been appointed Special Asst. for Public & Legislative Affairs to the Secretary of the Air Force.

Maj. Gen. Robert H. Warren, is being reassigned from duty as Superintendant, U.S. Air Force Academy, to Chief of Staff, Air Force Systems Command, effective Aug. 2. **Brig. Gen. Joseph J. Cody, Jr.**, presently Chief of Staff, AFSC, will be assigned as Dep. Chief of Staff, Systems, AFSC, effective upon arrival of Gen. Warren.

Brig. Gen. Robert H. McCutcheon will be reassigned from Dir. of Procurement Policy, Office of Asst. Secretary of Defense (Installations & Logistics), to Dir. Procurement & Production, Air Force Logistics Command, effective July 26.

Maj. Gen. Henry R. Sullivan, Jr., presently SACEUR Representative to the Joint Strategic Target Planning Staff, will become Deputy Commander, 2nd Air Force, Barksdale AFB, La., on Aug. 9.

Brig. Gen. Donald W. Graham, has been reassigned from duty as Dep. Chief of Staff, Materiel, Military Air Transport Service, to Commander, Eastern Transport Air Force, McGuire AFB, N.J. He succeeds **Brig. Gen. Robert J. Goeway** who has retired.

Brig. Gen. Gilbert L. Pritchard, Commander, USAF Special Air Warfare Center, Eglin AFB, Fla., has been assigned additional duty as Acting Commander, USAF Tactical Air Warfare Center, Eglin AFB.

Maj. Gen. Chorles R. Bond, Jr., Dep. Commander, 9th Air Force, Shaw AFB, S.C., has been assigned additional duty as Acting Commander, USAF Tactical Air Reconnaissance Center, Shaw AFB.

Col. John D. Ludlow has been named System Program Director for the Advanced Manned Strategic Aircraft (AMSA). He is located at Wright-Patterson AFB, Ohio.

MTMTS
Has New Headquarters

Headquarters, Military Traffic Management and Terminal Service (MTMTS), has moved from its original location in Building T-7 to the Nassif Building, 5611 Columbia Pike, Bailey's Crossroads, in Fairfax County, Va.

The official mailing address remains unchanged:

Commander
Military Traffic Management and Terminal Service
Washington, D.C. 20315

AMC/SMC
Relocation

As a result of a regroupment effected in May 1965, Headquarters, U.S. Army Materiel Command (AMC), and Headquarters, U.S. Army Supply and Maintenance Command (SMC), are now both located in Building T-7, Gravelly Point, Va.

The Commanding General and various staff elements of Headquarters, SMC, which perform functions both for SMC and the entire AMC, have been moved from the Nassif Building in Arlington, Va., to Building T-7.

In view of the regroupment, it is recommended that defense industry representatives who plan to visit offices of AMC or SMC contact the appropriate command Information Office at the telephone numbers listed below for office location prior to their visit:

AMC Information Office — (Area Code 202) OXford 7-8691.
SMC Information Office — (Area Code 202) OXford 7-5687.

Youth Opportunity Campaign Launched by President Johnson

The President has called on industry to play an important role in the Youth Opportunity Campaign designed to provide employment for boys and girls out of school during the summer. The following is the statement of the President, relating to this program, released by the White House on May 23:

"Next month, in June, when school is out, over two million American boys and girls—16 through 21 years old—will look for work and won't be able to find it.

"Some of these two million will be looking only for temporary summer jobs. But getting those jobs may be the difference between being able to go back to school or not going back. I think it is good for America to put boys and girls to work in the summer when they really want to work—and bad for them when they are denied the chance.

"Almost a million of these young Americans will be trying to find their places in life, trying to become independent, self-sufficient. . . .

"We can, in my judgement, increase by at least half a million the work and training opportunities this summer for these boys and girls—in a way that is good for them and good business for all of us.

"A. The Federal Government's Role

"I am directing the Government departments and agencies to make every effort to find meaningful work or training opportunities this summer for one extra trainee for every 100 employees on their present payrolls.

- "This is to be done, for the most part, in the field offices and installations around the country.
- "These opportunities will be given, so far as this is practicable, to boys and girls 16 through 21 who need them the most because of economic or educational disadvantages.
- "There is a potential employment here of 25,000 trainees.

"I am also directing a re-allocation of Economic Opportunity Act funds to permit an extension of the Neighborhood Youth Corps program this summer to an additional 50,000 boys and girls.

- "Programs covering more than this number have already been submitted by local government and private non-profit organizations in all of the states.

"B. The Private Employer's Role

"I hope and believe that private employers will cooperate in this program.

- "There are 620,000 firms in this country which employ from 10 to 100 workers. I hope that at least half of these firms will agree to take on one extra summer trainee.
- "There are 60,000 larger plants, employing over 25 million people. If each of them will add one extra summer trainee for each 100 employees, this will mean another 250,000 trainees.

"I hope other large organizations—labor unions, trade associations, churches, colleges—will make a similar effort. This could mean another 25,000 to 50,000 trainees.

"This program will be well worthwhile only if it means extra work-training opportunities, over and above those which would normally be offered. It would be worthless, or worse, if this program only replaced regular employment opportunities.

"C. Task Force Appointment

"I am asking the Vice President to chair a Task Force to work out the details of this program. This Task Force will include representatives of the U.S. Department of Commerce, the U.S. Department of Labor, State and local governments, and business and labor organizations.

"D. Immediate Action Proposals

"In the meantime, and so this program can get started immediately, I am asking that these things be done:

"1. That all private employers who are disposed to do so make their own arrangements immediately for one or more extra trainees this summer.

"If advice of this action, including the nam trainee, is given by mail to the Secretary of C Youth Opportunity Campaign Unit, Washington will be appropriately acknowledged.

"2. That all other private employers and orga who are willing to cooperate in this program so a nearest State Employment office.

"3. That all State Employment offices be through the U.S. Employment Service, to establis Youth Opportunity registers for this special sum gram.

"4. That all boys and girls 16 through 21 to work this summer and who don't have job touch immediately with the nearest Employmen office. If this is difficult, write to the Department Youth Opportunity Campaign Unit, Washington,

"It must be clear that we cannot and do not a boys and girls work this summer.

"We will do the best we can.

"In the depression of the 1930's we gave hun thousands of boys and girls this kind of extr through the National Youth Administration.

"We acted then from the desperation borne of economic distress.

"I ask that today, at the height of our prosp act with equal magnificence.

"A boy or girl who wants a chance to work is denied it costs this country what it cannot affor

"This is only one part of the broader attempt full employment opportunity in America.

"The 16 through 21 year old group will r however, half of our unemployment next mont

"This is a special problem resulting from the e the work force this year of so many of the 'post-v crop.' It demands special attention."

Sec Def McNamara Orders Implementation of Youth Progra

Secretary of Defense Robert S. McNamara has all Military and Department of Defense agencies lish additional jobs this summer for young women as part of the President's Youth Opp Campaign.

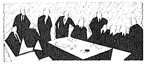
Secretary McNamara, in a memorandum, said new jobs, for youths aged 16-21, should be est at the ratio of approximately one position for employees currently on the payroll, and shall be tion to regular summer employment. There are at approximately 1,000,000 employees on the payrol approximately 10,000 new jobs would be created.

Positions such as helpers, which will provide bot ing and work experience, and positions in other and semi-skilled categories, which can be perfor young men and women, are envisaged for the p

At most military installations there is significar tenance work that has been deferred and which accomplished this summer by these boys and girls tary McNamara said in his memorandum.

Persons hired under this program will be paid hour, except in those instances when they are e in a position for which a higher wage rate is app under regular classification processes. Persons hire the President's program can be appointed under a Schedule A authority issued by the U. S. Civil Commission, or under other appropriate existing ter appointing authorities.

Restrictions on these youths being employed same agency that employs his or her parents as a employee will be observed, Secretary McNamara's randum emphasizes.



MEETINGS AND SYMPOSIA

JULY 1965

Annual Meeting and Technical Demonstration, July 26-29, at the Civic Center, San Francisco, Calif. Sponsor: Research and Technology Div., AFSC. Contact: A. J. Cannon (SEG) (SEE) Wright Patterson AFB, Ohio 45433, telephone (Area Code 513) 253-7111 ext. 35214

AUGUST 1965

Tenth Symposium on Space and Ballistic Missile Technology. August 4-6, U.S. Naval Training Center, San Diego, Calif. Sponsor: USAF Space Systems Div. Conducted by Aerospace Corp. Contact: Dr. Charles T. Morrow, symposium director, Aerospace Corp., Box 95085, Los Angeles, Calif. 90045.

AIAA/ION Guidance and Control Conference, August 16-18, at Mayo Auditorium, University of Minn. Sponsor: Science & Technology Liaison Office, Air Force Systems Command. Contact: Capt. D. B. Hente (RTSAC) P.O. Box 8758, O'Hare International Airport, Chicago, Ill., telephone (Area Code 312) 296-4411 ext. 397 or 398.

Foundation of Computability (tentative title), August 25-27, at RADC, Bldg. 106 Auditorium, Griffiss AFB, N.Y. Co-Sponsors: Rome Air Development Center and Hughes Aircraft Co.

VII International Congress of the International Association Quarternary Research Symposia, August 30-September 5, University of Colorado, Boulder, Colo. Sponsor: Organizing Committee for INQUA, U.S. National Academy of Sciences. Contact: Mr. Walter H. Bailey, Division of Earth Sciences. National Research Council-National Academy of Sciences, 2101 Constitution Ave., N.W. Washington, D.C. 20418, telephone 961-1204.

Second International Symposium on Organometallic Chemistry, about August 30-September 4, at Madison, Wis. Sponsors: U.S. Army Research Office—Durham, University of Wis., National Science Foundation. Contact: Dr. Robert West, Dept. of Chemistry, University of Wis., Madison, Wis.

Conference on Comparative Neurophysiology, dates undetermined, at Tokyo, Japan. Co-Sponsors: Air Force Office of Scientific Research and the Tokyo Medical and Dental University. Contact: Dr. H. E. Savely (SRL), Air Force Office of Scientific Research, Tempo-D, 4th St. & Independence Ave., S.W., Washington, D.C. 20333, telephone OXford (code 11) 6-4369.

SEPTEMBER 1965

Symposium on Structural Adhesives Bonding, September 14-16, at Stevens Institute of Technology, Hoboken, N.J. Contact: J. M. Bodnar, Chief, Materials Research Branch, SMUPA-VP6, Picatinny Arsenal, Dover, N.J., telephone (Area Code 201) 328-3183.

1965 Semi-Annual Conference of the American Society of Photogrammetry, September 22-23, at Wright-Patterson AFB, Ohio. Co-Sponsors: American Society of Photogrammetry and the Research and Technology Div., AFSC. Contact: Mr. A. J. Cannon (SEG), Research and Technology Div., AFSC, Wright-Patterson AFB, Ohio 45433, telephone (Area Code 513) 253-7111 ext. 35214.

American Society of Photogrammetry, September 22-24, at the Sheraton-Dayton Hotel, Dayton, Ohio. Co-Sponsors: Aeronautics Systems Div., Research and Technology Div., AFSC and the American Society of Photogrammetry. Contact: J. R. Quick (MCLAEB), Wright-Patterson AFB, Ohio 45433, telephone (Area Code 513) 253-7111 ext. 35167.

AF Industry Data Management Symposium, September 28-30, at International Hotel. Los Angeles, Calif. Sponsors: Ballistic Systems Div., (AFSC), DOD and Industry. Contact: Lt. Col. D. A. Cook (BSOM), Norton AFB, Calif., telephone (Area Code 714) 889-4411 ext. 8021.

Sixth Symposium on Non-Destructive Testing, September 28-30, at Sheraton-Dayton Hotel, Dayton, Ohio. Sponsor: Air Force Materials Laboratory, AFSC. Contact: Mr. Rowand (MAG), Air Force Materials Laboratory, Wright-Patterson AFB, Ohio 45433, telephone (Area Code 513) 253-7111 ext. 40209.

Third Symposium on the Plasma Sheath, dates undetermined, at New England Life Hall, Boston, Mass. Sponsor: Air Force Cambridge Research Laboratories. Contact: Mr. Charles E. Ellis, (CRDM), Air Force Cambridge Research Laboratoriss, L. G. Hanscom Field, Bedford, Mass. 01731.

OCTOBER 1965

9th Annual Organic Chemistry
ference, October 5-6, at Natick,
Sponsor: U.S. Army Natick La
tories. Contact: Dr. Louis Long
Asst. Head, Organic Chemistr
boratory (PRD), U.S. Army N
Laboratories, Kansas St., N
Mass.

1965 Congress of the Interna
Federation for Documentation (
October 7-16, at Washington,
Sponsors: Air Force Office of
entific Research, Office of
Research, Army Research Office
National Science Foundation.
tact: Rowena Swanson (SRIR)
Force Office of Scientific Res
Tempo-D, 4th and Independence
S.W., Washington, D.C. 20333,
phone OXford 6-5374.

NOVEMBER 1965

V/STOL Symposium, Novemb
4, at Wright-Patterson AFB,
Sponsor: American Helicopter
ety. Hosts: AFSC Aeronautics S
Division, Research and Techn
Division and Systems Engine
Group. Contact: Geo. Dau
Wright-Patterson AFB, Ohio,
phone (Area Code 513) 253-711
25104 or 23164.

4th Hypervelocity Techniques
posium, November 15-16, at A
Air Force Station, Tenn. Spo
Arnold Engineering Development
ter, ARO, Inc., and Denver Res
Institute. Contact: J. Lukasi
Arnold Air Force Station, Tenn.
phone (Area Code 615) 455-261
7204 or 7205.

4th Annual Symposium on P
of Failure in Electronics, Nov
16-18, at the Illinois Institu
Technology Research Institute
sponsors: Rome Air Develop
Center and the Illinois Institu
Technology Research Institute.
tact: Joseph Schramp (EMI
Rome Air Development Center,
fiss AFB, N.Y., telephone (Area
315) FF 6-3200 ext. 2813.

All r

CALENDAR OF EVENTS

July 1–4: 10th Mountain Division Association Reunion, Vail, Colo.
July 8–10: 4th Armored Division Association Reunion, Pittsburgh, Pa.
July 8–10: 82nd Airborne Division Association Reunion, Miami, Fla.
July 12–15: American Electroplaters Society Convention, New York, N. Y.
July 15–17: 3rd Armored Division Association Reunion, Los Angeles, Calif.
July 24: Ranger Aero Fair & General Aviation Education Day, Minneapolis, Minn.
July 24–25: 7th Annual Air Show, Erie, Pa.
July 25: Dawn Patrol Fly-In, Sturgis, Mich.
July 26–30: American Institute of Aeronautics & Astronautics Meeting, San Francisco, Calif.
July 31–Aug. 1: Air Show, Menominee, Mich.
Aug. 7–8: Sky-O-Rama, Baton Rouge, La.
Aug. 7–8: Cleveland Air Show, Cleveland, Ohio.
Aug. 9–11: Public Relations Society of American Convention, Denver, Colo.
Aug. 14: 20th Anniversary VJ Day.
Aug. 14–15: International Air Show, Abbotsford, Canada.
Aug. 15: American Institute of Aeronautics & Astronautics Air Display, Ontario, Calif.
Aug. 18–20: American Astronautical Society Convention, San Francisco, Calif.
Aug. 19: National Aviation Day.
Aug. 30–Sep. 5: American Meteorological Society Meeting, Boulder, Colo.
Aug. 31: Aerospace Day, Bartlesville, Okla.
Sep. 22–26: 20th Annual Convention of the National Defense Transportation Association, Detroit, Mich.
Oct. 4–17: PACIFIC CONCORD I, tactical air exercise involving units of the Royal Australian Air Force, the Royal New Zealand Air Force and the U. S. Air Force to be held in eastern Australia.

Classified Advanced Planning Briefings Scheduled by AWC

The U. S. Army Weapons Command (AWC), Rock Island, Ill., will conduct one-day classified Research & Development Advanced Planning Briefings for Industry on September 21 and 23.

The briefings, co-sponsored by the Army Weapons Command and the American Ordnance Association, are expected to attract nearly 700 invited representatives from AWC's research and development selected bidders list. The industry representatives will be
entations describing
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the Weapons

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Mississippi Forms Association of Govt. Contractors

A U.S. Civil Service Commission sponsored conference was held recently in Biloxi, Miss., to discuss possible organization of a Mississippi Gulf Coast Association of Government Contractors to provide for equal employment opportunity in the area.

In addition to Civil Service Commission representatives, the conference was also attended by personnel from the President's Committee on Equal Employment Opportunity, the National Aeronautical and Space Administration, the Department of Defense Equal Employment Opportunity Program and businessmen from the Mississippi coastal area. In all, some six counties were represented at the meeting: Pearl River, Hancock, Harrison, Stone, George and Jackson. The proposed contractor's association would direct its efforts toward long range programs of equal employment opportunity in the counties.

Army Officers Receive Outstanding Management Training

The Army is constantly improving the management ability of its officers. One of the methods used involves participation by selected officers in management courses conducted by leading universities.

Typical of these courses are the Advanced Management Programs conducted by Harvard University and the University of Pittsburgh. These are training grounds designed to sharpen the abilities of outstanding executives from industry who ordinarily deal with top management problems of significant financial dimension and long-range business policy.

The Army has been enrolling officers in the Harvard program since September 1947 and in the University of Pittsburgh program since February 1951, and to date 282 officers have had the opportunity to complete this training. They have benefited by sharing the lessons of their own experiences and the experiences of the potential leaders of industry encompassing widely divergent backgrounds.

In a recent letter to Lieutenant General J. L. Richardson, Deputy Chief of Staff, Personnel, Headquarters, Department of the Army, Mr. Albert Frey, the Director of the Management Program for Executives, Graduate School, University of Pittsburgh, Pa., praised the outstanding contribution of the Army officers who have participated in the program.

"These men have been outstanding contributors to the success of our program . . . in two of the last four sessions the class president was from Department of the Army," Mr. Frey stated.

General Richardson says that the Army is fortunate to participate in and contribute to the programs of both Harvard and Pittsburgh, and is extremely pleased with the broadened outlook and knowledge the officer participants have gained from the experience. With the tremendous technological advances in industry and the concommitant impact on global strategy and weapons systems, it is imperative that our outstanding officers—possibly future generals—keep in step with new and improved management techniques. Participation in programs such as those offered by Harvard and Pittsburgh is one method used to insure that the Army's future leaders are constantly up to date. ★

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AUGUST 1965

SPEAKERS CALENDAR

OFFICE OF THE SECRETARY OF DEFENSE

Hon. Cyrus R. Vance, Dep. Secretary of Defense, at U.S. Military Academy, West Point, N. Y., June 24.

Hon. John T. McNaughton, Asst. Secretary of Defense (International Security Affairs), at Brookings Institution, Washington, D.C., June 24.

ARMY

Brig. Gen. Harry G. Woodbury, Dep. Dir. for Comprehensive Planning, Office of Dir. of Civil Works, at dedication of John Redmond Dam, Burlington, Kan., June 19.

Maj. Gen. Austin W. Betts, Dep. Chief of Research & Development, at Inter-Disciplinary Colloquia, Sandia Corp., Sandia Base, Albuquerque, N.M., June 28.

NAVY

RAdm. William A. Brockett, Chief, Bureau of Ships, at National Assn. of Naval Technical Supervisors Conference, Honolulu, Hawaii, June 23; at launching of PLAINVIEW (AGEH-1), Lockheed Shipbuilding & Construction Co., Seattle, Wash., June 28 (appearance only); at commissioning of PERTH (Australian ship), Boston Naval Shipyard, Boston, Mass., July 10 (appearance only).

Hon. Victor M. Longstreet, Asst. Secretary of the Navy (Financial Management), at Freedom Bell Celebration, Memphis, Tenn., July 5.

AIR FORCE

Maj. Gen. Ben I. Funk, Commander, Space Systems Div., AFSC, at Society of Photographic Instrumentation Engineers meeting, San Francisco, Calif., Aug. 16.

Office of Appalachian Studies Formed

The Army's Corps of Engineers has established an Office of Appalachian Studies (OAS) to undertake a comprehensive study of the water and related land resources of the Appalachian Region and to prepare a plan for putting these resources to work in stimulating economic growth in the region.

The study will be carried out in close cooperation with the Appalachian Regional Commission, a joint-Federal-State activity established under the Appalachian Regional Development Act of 1965 to form overall programs for economic growth.

The new Office of Appalachian Studies will have its headquarters in Cincinnati, Ohio, and will function as part of the Corps of Engineers' Ohio River Division under the Division Engineer, Brigadier General W. P. Leber. It will have a small staff of engineers, economists and other resources-planning specialists headed by Colonel John C. H. Lee, Jr. Its work will be closely coordinated with other departments and agencies, both Federal and State, engaged in the work.

The plan to be formulated by the OAS will embrace all or parts of 19 major river basins located within several Corps of Engineers Districts and Divisions, whose staffs will participate in the study in their respective areas. The studies will include engineering and economic surveys and will deal with such matters as recreation, flood control, water quality, water supply, navigation and the like.

Group Formed to Study Procurement of Radios and Electronic Equipment

A study group to conduct a comprehensive analysis of the policies and practices in the procurement of radios and electronic equipment in Federal Supply Groups (FSG) 58 and 59 has been established in the Defense Supply Agency.

The study—scheduled to be completed by June 30, 1965—will include development of data relating to the operations of the Coordinated Procurement Program for all items in FSG 58, Communication Equipment, and FSG 59, Electrical and Electronic Equipment Components, managed by both the military services and DSA. The analysis and assessment portion of the study will focus on radios and associated components and parts in FSC 5820 and 5821.

The study was initiated at the request of the Assistant Secretary of Defense (Installations & Logistics) Paul R. Ignatius. In a memorandum of March 20, 1965 to the Military Departments and the Director, DSA, Mr. Ignatius stated:

"Recently it has come to my attention that each of the Military Departments procure radios of various types, and certain electronic equipment and components from the same manufacturers. The House Appropriations Committee has been critical of this arrangement and has pointed out several problems which arise from it.

"By this memorandum I am requesting the Director, Defense Supply Agency, to undertake a comprehensive analysis of our policies and practices in procuring radios of all types, and electronic equipment in Federal Groups 58 and 59."

DSA Makes Advance Procurement Information Available to Industry

Defense Supply Agency (DSA) Centers are providing, or will in the future provide, estimates to industry of future procurements as part of a continuing effort to improve industry/DOD relationships.

The advance procurement information is released to all firms on the bidders mailing list concurrently and release of the information is announced in the Commerce Business Daily. Timing of the information releases depends on the inventory management system of the DSA Center involved and the nature of the items managed.

DSA Centers now releasing advance procurement information are:

Defense Clothing and Textile Supply
  Center
2800 South 20th Street
Philadelphia, Pa. 19101
Telephone: HOward 5-2000

Defense Construction Supply Center
Columbus, Ohio 43215
Telephone: 236-3131

Defense Electronics Supply Center
1507 Wilmington Pike
Dayton, Ohio 45401
Telephone: 252-6551

Defense General Supply Center
Richmond, Va. 23219
Telephone: 275-3861

Defense Industrial Supply Center
700 Robbins Ave.
Philadelphia, Pa. 19111
Telephone: RA 8-1212

The U. S. Air Force Interest In Advanced Propulsion

by

Gen. B. A. Schriever, USAF

Propulsion is a pacing area of technology in the development of new aeronautical and space vehicles, as well as the true *aerospace* vehicles which are versatile enough to operate efficiently both within and outside of the earth's atmosphere.

Four areas of propulsion technology look particularly promising for further development: gas turbine technology; chemical rocket propellant technology; electric propulsion; and the supersonic combustion ramjet, or SCRAMJET.

Gas Turbine Technology.

The gas turbine engine is already well proven on today's military and commercial jets. For the future, it offers real potential for efficient operation at widely divergent mach numbers and altitudes.

A leading feature of the gas turbine engine is flexibility, and strong efforts are being made to further increase this capability. Greater fuel economies and performance capabilities can be achieved by improving such component parts as the compressor, combustor, turbine and nozzle.

The turbine component is the heart of the gas turbine engine, and until now has been the major limiting factor. The high temperature and high stress loadings to which the turbine blades are exposed have limited current operating temperature to about 1700° or 1800°F. Recent advances in materials and cooling techniques have already allowed this temperature range to be increased considerably.

Improved gas turbines will be significant for future systems, such as the C–5A. The low fuel consumption required to give the C–5A its long range will be achieved by the use of efficient high bypass turbofans with increased turbine temperature capability.

Improved exhaust nozzle efficiency which is important for better engine performance is also possible.

Chemical Rocket Propellant Technology.

A second area with potential for progress is chemical rocket propellant technology. Preliminary indications from our inhouse and civilian laboratories show that it is possible to develop new forms of very high energy chemicals with two or three times the energy potential of current propellants.

Several approaches exist that should raise the delivered specific impulse of storable liquids up to 330 seconds.

A significant increase in the specific impulse of chemical rockets might be achieved through the use of air augmentation.

Two forms of air augmented rockets currently interest the Air Force. One is the ducted rocket, which uses subsonic burning in a duct fed by fuel-rich exhaust gas from the rocket and by air from the atmosphere.

The second consists of a chemical rocket engine equipped with a nozzle ejector shroud. This system is referred to as the RENE cycle. This form of air augmented rocket can be operated with or without afterburning and appears to be able to operate efficiently over a very wide range of trajectory environments.

Solid propellant technology programs are advancing the capability of powerplants in terms of thrust size, energy content, and such operating characteristics as burn time, stop-start and variable thrust. A major benefit can be provided by the higher energy ingredients, especially light-metal hydrides in place of the aluminum powder currently being used as the fuel additive. The energy increase afforded by these new hydrides reflects a very substantial increase in payload capability for future missiles and space launched vehicles.

The space launch vehicles envisioned for the post-1970 time period—recoverable launch vehicles in particular—pose a tremendous challenge to propulsion technology. Rocket engines producing much higher performance than that available from current engines will be required for recoverable aerodynamic type launch vehicles.

The high pressure, LOX-hydrogen rocket engine using a two-stage combustion cycle looks very promising in this connection. The Air Force Systems Command's Research and Technology Division, through its Rocket Propulsion Laboratory, has directed exploratory development programs in this area for the past three years. Progress has reached the point where a full scale prototype engine can be developed.

Electric Propulsion Technology.

The third major area of propellant technology that appears very promising is electric propulsion. The potential thrustor candidates include several efficient devices covering the specific impulse range of 500 to 10,000 seconds.

A distinct advantage of electric propulsion is the extended lifetimes that can be obtained. Present programs are aimed to extend lifetimes at increased performance levels. Such aspects of electric propulsion systems as power conditioning, feed systems and control systems are being researched to provide the technology necessary for a complete electric propulsion system. At the present time there is a joint USAF-NASA program to study the feasibility of a Solar-Electric Spacecraft for Planetary Probes.

One of the most promising applications for electrical propulsion systems is in attitude control and station keeping for near earth satellites. Electric propulsion can also be used for orbit changing. In the 1970 to 1980 time period electric propulsion systems may be developed to provide primary thrusting for deep space scientific probes and manned missions.

Supersonic Combustion Ramjet Technology.

The fourth area of propulsion technology is the supersonic combustion ramjet, or SCRAMJET. A number of promising SCRAMJET approaches and applications have been studied for several years in laboratories and research facilities throughout the world.

The SCRAMJET is the most promising approach today for sustained hypersonic flight. It could make feasible the development of recoverable launch vehicles for flight speeds up to about 8,000 miles per hour as an initial step. Additional development can lead to speeds of about 17,000 miles per hour, which would permit the delivery of very large payloads into space at less than one-fifth the unit cost that is presently required.

The SCRAMJET has promising flexibility that would permit economical and efficient ranges in speed from 2,500 to 17,000 miles per hour. Thus it could be used effectively on hypersonic transport aircraft with both military and commercial applications. With SCRAMJET technology in hand it would be conceivable to bring New Delhi within about an hour's flying time of New York and at reasonable cost.

Propulsion is a pacing area of technology because the lead times involved can be very long. Naturally the advances that are achieved in the propulsion area need to be matched by advances in a number of other technical areas.

These advances can lead to really significant progress, both in aeronautics and in space. But this progress depends on the strength of our technology programs. We simply cannot postpone or delay these efforts. Those industries that push a strongly backed and aggressive program in propulsion technology today will have the lead in tomorrow's military and commercial applications.

Major Crossroads in Space Program

(*Continued from Page* 2)

missions which can and should be performed in space. Before we can make that determination, we will need more fundamental knowledge than we have today. We cannot afford to make decisions based upon instinct or wishful thinking or so-called "common sense." The hard, scientific realities of space must be investigated, understood and profoundly appreciated before we can commit ourselves to any purely military missions beyond our atmosphere.

This is not to say that we don't know what our military responsibilities are in regard to space. These we have recognized with increasing clarity. We must avoid technological surprises; we must stay abreast of all scientific discoveries and technological advancements that may have military significance; and we must develop and maintain a capability to carry out in space any military mission which can be performed there more effectively, more economically, or more dependably than it can from the earth or in the air.

The big question mark in deciding how and where we can best provide our nation with the security it requires is MAN. We simply don't have enough experience as yet to say with any certainty what his abilities or limitations in space will be. There is urgent need for more basic knowledge of the near-Earth space environment and man's ability to operate in that environment. And I am convinced that the only way we are going to find out what man can and cannot do in space is to put him up there and require him to conduct some meaningful experiments. I mean comprehensive, carefully designed experiments to determine what he can do in space—not merely as a passive observer in a totally pre-planned flight, serving primarily as a sensor, or a monitor of sensors, but as an active participant who can use his powers of analysis and decision to alter the course of the investigations in such a way as to produce the maximum of verifiable and quantifiable data on man's abilities to survive, overcome and perhaps take advantage of the space environment.

I happen to be one who is convinced that we will find military missions which can best be performed by man in space—not just because I wear a blue suit and am conditioned to, and perhaps nostalgic for, man's active role in our nation's defense, but because history tells me that in every environment in which man has learned to live—on the land, whether it be in arctic or tropical climates, on and under the sea, and in the air—there have emerged valid military missions which man himself can best perform. Unfortunately, I can't prove that this extrapolation of history is valid, but neither can I be proved wrong, until we get men—not just one or two, but meaningful numbers of men—into space and determine what they can and cannot do to contribute to our military mission.

I believe the Manned Orbital Laboratory (MOL), as presently proposed by the Department of Defense, will enable us to come up with some of the answers. For the first time, we will be able to put military men in space whose primary interest will be in military missions. They will perform certain experiments that will let us know how well man can withstand the stresses resulting from the effects of long periods of weightlessness, confinement, isolation and radiation and meteorite hazards; and how effectively his senses operate, especially his vision and his manual dexterity while working inside and outside an orbiting space station.

MOL will also enable us to investigate in more detail the effects of space environmental phenomena on metals, materials, fluids and lubricants while under man's direct observation and control.

It will greatly facilitate scientific observations and experiments in the fields of astronomy, geodesy, bioscience and other areas which cannot be duplicated on earth.

Also, various operational techniques can be developed for such tasks as in-space maintenance and repair.

In other words, from experiments conducted in MOL by our astronauts, we hope to identify the militarily useful space missions which man will be able to perform.

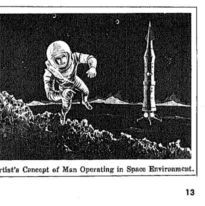
I am convinced, however, that MOL is not going to provide us with all of the answers. As a matter of fact, it may provide more questions than answers, just as operation of aircraft at high altitudes and high accelerations did. We designed around those problems with oxygen systems, heated clothing or cabins and anti-G suits; but these engineering designs were the outgrowth of thousands of hours of painstaking, difficult and, sometimes discouraging, fundamental research. In the same way, MOL will tell us more about *what* happens in space, but it will take a great deal more sophisticated and fundamental research, both in space and in our laboratories here on earth, before we can understand *why* and *how* it happens.

We do not know about all the stresses man will be subjected to in prolonged space flight, but we can anticipate many of them: noise and vibration, g-loadings, weightlessness (which, if compensated for by some form of artificial gravity, the gravity may, in turn, produce other stresses), ionizing radiation, fear, prolonged states of alert, close confinement, use of reclaimed water and special foods, a recycled atmosphere, odors, temperature and humidity changes, restriction of physical movement, disruption of normal day-night and work-rest cycles, monotony, fatigue and loneliness. To what degree these combined stresses will affect his operations, how to reduce the effects, or eliminate them, and what other unpredicted stresses may occur, we have yet to learn.

This, then, is one clue, I feel, to the direction that our future space program must take—a greater emphasis upon a fundamental understanding of man himself and the environment in which he is to operate. I am not proposing that to do so we should reduce our emphasis on deep space exploration in the future—as a matter of fact, I contributed to and supported the decision to make a manned lunar landing the focus of our present program, because I was and still am convinced that this kind of a long-range goal gives any program a sense of direction and cohesivness and viability. I *am* saying, however, that at the same time that we pursue these frontier explorations, we must continue to explore and investigate and try to understand the environment and phenomena of space in a more deliberate, fundamental and sophisticated way.

We are all conditioned by our experiences and background, of course, and one reason that I feel as I do is undoubtedly because this kind of fundamental research is the job of my present command, the Office of Aerospace Research (OAR). We are charged with conducting or monitoring basic research in those areas of science that seem to offer the greatest potential to Air Force interests. Much of this research is not related to the space program, but more than a little of it is. We are quite directly concerned with contributing to the solution of problems pertaining to space environment, communications, navigation and control, propulsion, re-entry, life support systems and many other topics that are of paramount interest to people in the space program.

(*Continued on Page* 24)



Artist's Concept of Man Operating in Space Environment.

World-Wide Communications

(*Continued from Page* 5)

channel microwave system that runs the width of the isthmus.

The STRATCOM-Pacific subcommand was activated on November 3, 1964, with headquarters at Schofield Barracks on Oahu. On that date STRATCOM-Pacific acquired supervision over Army relay centers on Oahu, Okinawa, Taiwan, in Saigon and in Bangkok. On the same date also the extensive Pacific ionospheric scatter system was transferred from contractor operation to STRATCOM-Pacific. STRATCOM also operates major radio circuits westward from Hawaii.

To complete the picture, STRATCOM is also responsible for the operation of ground stations for the Defense Satellite Communications Program. The Army's Satellite Communications Agency (SATCOM) at Fort Monmouth has the job of all R&D for the ground environment, while STRATCOM is charged with installing, operating and maintaining the ground stations.

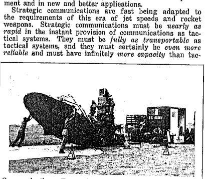
Two detachments of USASCC-CONUS troops, Detachments Nos. 10 and 11, continue to be deeply engaged in this newest mode of military communications—space satellites. Originally, from early 1962, they manned Army's first large fixed stations built for satellite communications—at Fort Dix, N. J., (Det. 10) and at Camp Roberts, Calif., (Det. 11). Here they pioneered in the art of communicating by satellite relay under a research and development program technically supervised by the U. S. Army Satellite Communications Agency in a joint DOD-NASA effort.

During 1964 teams of experienced STRATCOM operators from the two detachments went overseas to set up and man small transportable satellite communications stations located in Hawaii, the Philippines and elsewhere in the Far East.

All this suffices to show how significant and how fast growing are STRATCOM responsibilities and activities—not to mention important changes and new developments in Taiwan and in Korea. Neither has mention been made of some very important field commands of STRATCOM in the United States, such as the Joint Supply Command at Fort Ritchie, Md., the Interagency Communications Agency in the Washington area, the Radio Propagation Agency with headquarters at Fort Monmouth, and the 11th Signal Group at Fort Lewis, Wash.

In short, STRATCOM's responsibility is just about 100 per cent operations, seven days a week, 24 hours a day—moving traffic, getting installations up and systems in operation, testing and evaluating equipment and systems, developing experience (and skilled operators) in new ways of doing things, staying ahead in ideas of improvement and in new and better applications.

Strategic communications are fast being adapted to the requirements of this era of jet speeds and rocket weapons. Strategic communications must be *nearly as rapid* in the instant provision of communications as tactical systems. They must be *fully as transportable* as tactical systems, and they must certainly be *even more reliable* and must have infinitely *more capacity* than tactical systems. The realities of military success, with or without missile intervention, demand quick communications that have absolutely no respect for distance or geographical location.



Communications Team Assembles a New Experimental Satellite Link Terminal which is Capable of Communicating with a SYNCOM Satellite.

To cite an example, recently STRATCOM was asked to provide a special high priority circuit in an area halfway around the globe. The requirement was to be met, not in days, but in hours. Within 24 hours the transportable radio system, its security equipment, its installation and operating teams were all assembled and aboard an aircraft flying for the Far East designation. Thus it can be seen that strategic communications today must be capable of responding in an entirely different way than a few short years ago.

For this kind of quick reaction, this kind of contingency operation that requires strategic communications entry into the DCS, or extension of the DCS, in support of Army commanders, of missions assigned by the Chief of Staff or by the Joint Chiefs of Staff, STRATCOM does, in fact, possess a first line organization of troops and equipment.

The organization is the 11th Signal Group, a prototype unit tailored to execute these and other special and unique communications missions. The 11th is scheduled to have three large communications companies, one of which is now being equipped with a mix of the latest long distance transportable communications packages.

A flourishing strategic development of the DCS (in which Army communicators of STRATCOM made important contributions) is the switched circuit automatic network, or SCAN, now known as the first generation of DCS AUTOVON, the Automatic Voice Network. Working with the Bell Telephone Laboratories and with the Long Lines Department of AT&T, the Army in the early 1960's brought into being the initial automatic voice network of four switching centers. Subscribers use a touchtone telephone handset to reach automatically any other subscriber in the network, or they may use a conventional phone to a switchboard which has lines into a nearby SCAN switching center.

The high-speed, high-volume data portion of AUTOVON is gradually being transferred to AUTODIN, the automatic digital network of the DCS, with the ultimate objective of restricting AUTOVON to voice (and low speed data) service. Thus AUTOVON is in the main a DCS network of voice communications.

In all these and many other on-going developments of the future, STRATCOM continues to support Army's portion of the DCS the world over.

"Support" is hardly the right word. It smacks of a static state of affairs, and present developments are obviously anything but static.

Ad Hoc Group to Study Navy Procurement

An ad hoc group to study ways and means to improve Navy procurement planning has been established in the Office of the Chief of Naval Material.

The study charter—signed by Vice Admiral Galantin, Chief of Naval Material, on March 31, 1965—charges the ad hoc group with responsibility to develop "policy, procedural and organizational guidance required to integrate procurement planning with technical and financial planning in the weapon system development/acquisitions process."

The charter directs that prime emphasis be placed on "ensuring that procurement planning is formalized early enough in the overall planning cycle to support effective weapons system acquisition."

Admiral Galantin requested the ad hoc group, in conducting its study, to consult with appropriate Designated Project Managers and functional elements in the Naval Material Support Establishment.

Captain J. L. Howard, SC, USN, Assistant Chief of Naval Material for Procurement, is chairman of the ad hoc group.

U.S. Navy Highlights DOD/NSIA Advanced Planning Briefings

This month's "From The Speakers Rostrum" features cerpts from the Navy addresses given at the regional OD-NSIA Advanced Planning Briefings for Industry ld during March and April in Los Angeles, New York ty, Chicago, Dallas and Washington, D. C.
The Air Force presentations will be covered in the July sue of the Bulletin.

U.S. Navy Advanced Planning Requirements

VAdm. I. J. Galantin, USN
Chief of Naval
Material

Office of Naval Material

. . Because the Navy is anxious to insure that all who qualified are afforded an equal opportunity to obtain vy business, we have aimed our remarks toward the n who has had few dealings with the Navy. Our comnts, we believe, also will be meaningful to those of you om we already count as members of the Navy-industry m.

'm going to invite four points to your attention:

First, we should all understand how and why Navy requirements differ in nature from those of the other services.

Second, you should know how the Navy is organized to do business.

Third, I want to explain the missions of the Navy in terms which will help you make a "market analysis" of our needs.

Finally, I'll call attention to procedures for entering the Navy contracting arena.

'o set the framework of this review, I have to point out t the Navy material and equipment problem differs, in basic nature, from those of the other armed services. Navy deploys its surface, sub-surface and airborne tems from the polar regions of the globe to the tropics, from outer space to the deepest depths of the oceans.

Our submarines operate under the Arctic ice pack.

The task force in Antarctica is a Navy unit.

The project for moving farther into "inner space"—the deep ocean—is a Navy program.

- The Navy is also concerned with outer space, and relies on satellites for communications, navigation and weather surveillance.

This summary emphasizes the fact that Navy warfare systems encounter extremes across the total spectrum of:

- Temperature.
- Water pressure.
- Sea motion and explosive shock.
- Aerodynamic heating.
- Salt water corrosion.
- Space radiation.
- Other similar physical forces.

I mention these aspects of Navy systems to explain that, as a Navy contractor, you may encounter unusual specifications. But stringent contractual requirements make good sense when viewed from the perspective of the demands which might be made on the product, as well as from our outlook as taxpayers eager to get the most for our defense dollars.

. . . Now—how do you do business with the Navy? Fundamental to the answer of that question is knowledge of how the Navy is organized to do business with you.

The part of the Navy which is concerned with providing logistical support for the operating forces of the Navy and Marine Corps is called the Naval Material Support Establishment. As Chief of Naval Material I command that organization.

The Naval Material Support Establishment consists basically of four material bureaus: The Bureau of Naval Weapons, the Bureau of Ships, the Bureau of Supplies and Accounts, and the Bureau of Yards and Docks.

Of $9.4 billion appropriated for Fiscal Year 1965 logistics support, $4.4 billion goes to the Bureau of Naval Weapons.

The Bureau of Ships is obligating in Fiscal Year 1965 some $1.8 billion in building 49 new ships, including 16 new anti-submarine destroyer escorts. This bureau also will spend considerable sums—about $1.1 billion—for procurement of ship related material and for support of fleet operations.

A Polaris Submarine Under Way.

The Bureau of Supplies and Accounts appropriations average about a quarter of a billion dollars, which will be spent for purchase of goods and services needed at naval installations, and for food, clothing and other general supplies.

The Bureau of Yards and Docks, the Navy's oldest bureau, will supervise the expenditure of this year's appropriation of about $400 million for the operation and upkeep of naval stations, and $250 million of military construction money.

. . . How does the funding and financial process tie in to the missions of the operating forces? The main "torque converter" between the programming and budgeting system and the fighting forces is the Five Year Force Structure and Financial Program. . . .

Let us look at trends within three of the programs, and see how these trends affect the Navy.

Program One of the Five Year Force Structure and Financial Program supports Strategic Retaliatory Forces. The Navy part of this program consists of our Fleet Ballistic Missile submarines.

. . . While the annual trend is downward, two aspects of Program One are tending upward. The cost of operation is increasing, as more submarines spend more time at sea, and the cost of research and development is rising.

A major portion of the increasing costs result from the development of Poseidon. Poseidon will cost about $900 million for development, and about $1.1 billion for production and installation.

If experience with Polaris is an indicator, (and I think it is), the sub-contracting opportunities in connection with Poseidon will equal about 50% of the total program cost.

Except for the Fleet Ballistic Missile Forces, the bulk of the Navy and Marine Corps are part of the General Purpose Forces which are supported under Program Three. Navy elements of the General Purpose Forces will absorb about $9.1 billion during this Fiscal Year. The trend into next Fiscal Year increases slightly; about $9.55 billion are programmed for Navy and Marine Corps General Purpose Forces in Fiscal Year 1966.

General Purpose Forces can be best identified by their missions. Attack carriers and their embarked air wings, for example, have the basic mission of Strike Warfare. Many of you are interested in aviation, avionics or other air-oriented endeavors. Our general outlook is for expenditures in this area to continue at approximately their current levels. We are also satisfied that manned aircraft generally and carrier-based aircraft in particular have bright futures.

A second major mission carried out by General Purpose Forces is Anti-Submarine Warfare. . . . In the Anti-Submarine Warfare field, the problem is no resources. In Fiscal Year 1965 we will assign $2.152 billion to Anti-Submarine Warfare. No major fluctation in this figure is anticipated in FY 1964. We have enough money. What we need are technical solutions to the problems of detecting, classifying and localizing enemy submarines.

A third mission of the Navy, supported under Program Three, is Anti-Air Warfare. Studies leading to the possible development of a new advanced surface missile system are now under way. . . .

Amphibious Warfare is a fourth mission of the Navy and Marine Corps. Large numbers of new amphibious type ships are being built, not only because a sizeable proportion of the existing amphibious ships are approaching obsolescence, but also because the techniques of Amphibious Warfare are changing.

It should be noted, in connection with Amphibious Warfare, that the United States Marine Corps figures prominently in the financial planning of the Department of the Navy.

Among the warfare systems of special interest to the Marine Corps are several, now under development, which will enter the funding picture on a sizeable scale during the next few years. Perhaps some of you will have a direct hand in the development and building of:

a. New high speed amphibious and landing craft.
b. V/STOL assault aircraft.
c. Longer range, lighter weight, more effective Naval gunfire and missile support weapons.
d. All-weather system for controlling the ship-to-shore movement.

. . . The sixth segment of the Five Year Force Structure and Financial Program deals with research and development. Of particular interest among the systems now being developed is one which promises to make major contributions to man's ability to exploit the sea, both militarily and economically—the Deep Submergence Systems Project.

The Deep Submergence Systems Project was created to meet four specific requirements:

1. Location of stricken submarines and rescue of their crews.
2. Search for and recovery of small objects down to 20,000 feet (Incidentally, this depth covers 98% of the ocean floor).
3. Salvage of submarines or ships on the continental shelf, and development of equipment for salvage work at still deeper depths.
4. Expanding man's capability for working in the sea.

This project was recently established by the Navy and industry was briefed on it last November by the Special Projects Office, which is charged with its management. Like most systems in the early developmental phase, the Deep Submergence Systems Project is now funded on a relatively modest scale. Over the next five years the Navy plans to spend at least 200 million dollars in the "ocean engineering" aspects of deep submergence.

. . . As those of you who work with the Navy already know, developing Navy business is a lot like developing any other kind of business.

Step one in earning this business is to match your capabilities with our needs. Analyze the market and decide what part of it is of interest to your firm.

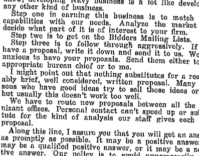
Step two is to get on the Bidders Mailing Lists.

Step three is to follow through aggressively. If you have a proposal, write it down and send it to us. We are anxious to have your proposals. Send them either to the appropriate bureau chief or to me.

I might point out that nothing substitutes for a reasonably brief, well considered, written proposal. Many persons who have good ideas try to sell those ideas orally, but usually this doesn't work too well.

We have to route new proposals between all the cognizant offices. Personal contact can't speed up or substitute for the kind of analysis our staff gives each new proposal.

Along this line, I assure you that you will get an answer as promptly as possible. It may be a positive answer, it may be a qualified positive answer, or it may be a negative answer. Our policy is to avoid unnecessarily prolonged decisions. If the reply is negative, you will be free to assign your resources and efforts to more promising areas. We won't leave you dangling on the hook.



New High Speed Amphibious and Landing Craft.

It has been a pleasure to review Navy business possibilities with you. No one knows better than those of us who are responsible for logistics support of the fleet that Naval power is rooted in the scientific and industrial competence of our nation. We appreciate your interest and solicit your support.

Bureau of Naval Weapons

RAdm. E. E. Christensen,
USN
Asst. Chief for Plans
and Programs
Bureau of Naval Weapons

. . . The mission of the Bureau of Naval Weapons is two-fold. It must provide the Fleet with superior weapons systems, and it must provide the support required to keep those systems operating.

The Bureau's responsibility for a weapon system covers the entire life cycle from the inception of research and development until its final withdrawal from service. This includes the design, development, manufacture and, finally, the delivery to the Fleet of a fully operational system. While in service, the Bureau has the responsibility for the direct costs of operations and maintenance, including overhaul and modification.

To accomplish its mission, the Bureau of Naval Weapons has an annual budget of about $4.5 to $5 billion.

The Bureau's interests in the fields of aviation and ordnance are legion. They range from astronautics to aircraft; from missiles to bullets. The catapults, arresting gear, fire control radars, directors and ASW equipments are all in our area of responsibility.

. . . First, manned aircraft.

We see no letup in the demand on the Navy's carrier striking forces. Consequently, we will continue to look for improved aircraft performance for strike, reconnaissance and close air support missions.

We seek new missiles—as our opponents acquire higher performance aircraft and missiles, we must improve the protection for our fleets. We will need higher performance missiles as well as superior interceptors capable of destroying enemy missiles, aircraft, or spacecraft.

We will increase our use of space technology to improve the Navy's capability in navigation, mapping and surveillance, and in developing systems to counter efforts to degrade the effectiveness of our naval task forces.

As submarines go deeper and run more silently, our ASW problems will become more difficult. The volume of the sea to be searched increases as the submarine operates at greater depths. The job of detection equipments will become even more difficult, and will require extended range ASW weapons of much greater effectiveness and accuracy.

In amphibious warfare, improved helicopters and fire support capabilities are required to back up the Marine Corps in landing operations.

. . . Next, I will indicate some of the major projects on which we are working, or considering, to meet these requirements.

For the next generation aircraft: in carrier-based types, we are interested in an all-weather attack aircraft, possibly using vertical take-off and landing techniques; an airborne early warning aircraft with greater effectiveness and less susceptible to detection and countermeasures; and an ASW aircraft having hovering capabilities as well as high speed and good range and endurance. We will require an advanced jet trainer and a new mission support aircraft.

In vertical take-off and landing investigations, as with helicopters, we are participating with the other services in several programs to investigate the potential of various techniques.

The X-22 V/STOL program is Navy sponsored and features the dual tandem ducted fan concept.

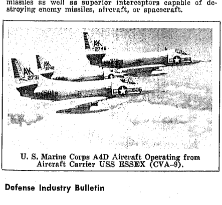
The NH-3A is a high speed research compound helicopter in which we are investigating the behavior of helicopter rotors at forward speeds in excess of those currently attainable with conventional helicopters. This is a Navy managed program jointly funded by the Army.

We foresee the helicopter being used in a wider variety of missions in the Navy. In addition to the uses which I have mentioned earlier, we may need a small manned ASW helicopter carrying both sensors and weapons which can operate from the deck of a destroyer.

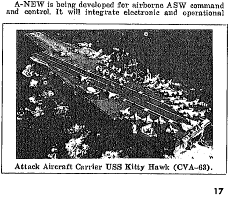
. . . Airborne electronics and their support have grown so complex that we must now integrate the electronic subsystems in the aircraft. Three such systems coming up in the future are IHAS (Integrated Helicopter Avionics System), ILAAS (Integrated Light Attack Avionics System) and A–NEW (Airborne ASW Command and Control System). All three use modular systems, digital computers and micro-electronics. Both IHAS and ILAAS will use a test system being developed called VAST (Versatile Avionics System Test). The test equipment also is modular and computerized.

IHAS will be used initially to give the CH-53 Marine assault helicopter all-weather capability for vertical assault and logistic support. It is planned to incorporate ILAAS in the A7 attack aircraft in 1967.

A-NEW is being developed for airborne ASW command and control. It will integrate electronic and operational



U. S. Marine Corps A4D Aircraft Operating from Aircraft Carrier USS ESSEX (CVA-9).



Attack Aircraft Carrier USS Kitty Hawk (CVA-63).

functions to provide air crews automatically with solutions to ASW search and attack problems.

In surface launched missiles, we are working on the design of a standard missile to replace Tartar and Terrier.

. . . We are studying a short-range "point defense" missile system for use on the smaller combatant ships, and on auxiliary and amphibious types to give them a better air defense capability.

In the airborne missile field, the Phoenix system is being developed for the F-111B; and we are working on the electro-optical (or TV-guided) air-to-surface missile, Walleye.

In conventional ordnance, we are working on a 5" lightweight automatic gun, on rocket-assisted projectiles, an extended range ASROC, improved torpedoes, mines and free-fall weapons tailored for specific combat tasks.

. . . A very important area of research involves the improvement of power plants. There has been great progress in reducing the fuel consumption of the turbojet engine over the years, and this can be expected to continue. Taking a brief look into the future, a regenerative turbofan is a distinct possibility for providing another step in reduction of fuel consumption. Such an achievement would permit a sizable decrease in the weight of an aircraft for the same endurance, or an increase in the endurance for the same weight aircraft.

. . . Needless to say, there are problem areas where we need the help of industry in providing solutions.

The most pressing problem in weaponry is that of target acquisition and identification.

The best overall airborne short-range target acquisition system for surface targets still remains the pilot's unaided eye. We are working on forward-looking and high resolution radar, infrared and electro-optical techniques in an effort to solve this problem.

In the acquisition of air targets, from both ships and aircraft, we need better means of identifying the number of targets in a raid at long ranges. Of equal interest is more timely acquisition of low flying targets.

In both shipborne and airborne radar, we must develop techniques for acquiring and tracking targets in an environment of heavy electronic jamming.

In airframe technology, we are concerned with the special problems of aircraft launch and recovery aboard carriers.

We need methods for predicting structural fatigue and for monitoring the effects of individual hard carrier landings so that damage can be assessed prior to the next flight.

. . . Having covered our R&D areas of interest, let us turn to the budget and procurement.

. . . Overall, there is an increase of over $300 million in procurement.

Well over a half-billion dollars of FY 1966 funds will be spent on these weapons systems:

A7 Attack Aircraft
A6 Attack Aircraft
Torpedo MK 46
Dash
Snakeye

For operations and maintenance, the budget is increased about $60 million over fiscal year 1965. FY 1966 funds will support 7200 Navy and Marine Corps operating aircraft as well as the Bureau's shore installations. These funds pay for such items as aircraft fuel and oil, and for the repair and overhaul of naval aircraft and ordnance.

. . . Within the FY 1966 budget, approximately $170 million will be applied to exploratory development in such areas as:

Airborne Sonars
Aerial Navigation
Underwater Guidance and Control
Weapons Fire Control
Guided Missiles
Astronautics

About $250 million of the budget will go into operational systems development of new weapon systems and improvements to existing systems.

. . . Barring unforseen developments, we expect that the Bureau's total budget will continue at a level of about $5 billion for several years.

Now that I have discussed some of the monies that we will spend—

How can one obtain information on the requirements of the Bureau of Naval Weapons?

Many of you are familiar with the R&D Clinics which we hold periodically, and many of you work with us in associations such as the NSIA. In addition, we provide considerable written material to industrial scientific groups under our long-range scientific and technical planning program. . . .

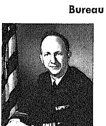
To advertise our procurement needs, the Bureau utilizes the Department of Commerce Business Daily to the maximum extent possible consistent with security considerations.

Additionally, many thousands of parts and stock for inventory are purchased through field procuring activities such as the Aviation Supply Office in Philadelphia and the Ships Parts Control Center in Mechanicsburg, Pa. Shopping lists of items purchased by these offices and items for which we are seeking new sources are also available. . . .

We recognize that we can fulfill our mission only with the full cooperation and support of the industry team.

We solicit your ideas and your proposals. These, and any questions that you may have, can be addressed to the Chief, Bureau of Naval Weapons, Navy Department, Washington, D. C.

Bureau of Ships



RAdm. J. A. Brown, USN
Asst. Chief of Bureau
of Ships for Design,
Shipbuilding & Fleet
Maintenance

The mission of the Bureau of Ships is to create and care for ships needed by the Navy's operating forces. We conceive, design, build and maintain the ships. We are concerned with everything from complete computer systems to the simplest type of housekeeping equipment. In addition to providing for the needs of the Navy and the Marine Corps, the Bureau of Ships procures ships and boats for the Army, the Air Force and for foreign countries under the Military Assistance Program.

. . . In *research and development* we cooperate with the Chief of Naval Research and the Chief of Naval Development in sponsoring a significant amount of work directly related to ship design.

Ship Design and Procurement—In the design of ships, as in our R&D efforts, we share the workload with you. The Bureau of Ships Headquarters Establishment and Field Activities have a significant capability to prepare their own designs, both of the ship itself and of the shipboard equipment. While we think we are second to none in the field of warship design, we have great respect for the competence of commercial ship design firms and expect to continue to depend upon them for approximately half of our ship design work.

Procurement of the ships themselves is handled by our Headquarters in Washington. The procurement of major quantities of components and systems for ships built by our Navy is shared between Headquarters and our Field Activities.

The third major area of responsibility—that of *fleet* *maintenance*—is controlled by Headquarters and accomplished by our Navy Yards and Industrial Managers. They, in turn, depend upon you for parts and raw materials required to overhaul and modernize our ships.

The fourth area is *technical and material support of ships*. In addition to providing support while ships are in overhaul, we must provide a large volume of material for shipboard use. The Bureau of Ships portion of this task is concerned with the technical items. The Bureau of Supplies and Accounts and the Defense Supply Agency procure the common non-technical items.

. . . In the research and development area we will spend or obligate $295 million. In shipbuilding, which includes new construction and conversion, we will obligate $1.820 billion, and in support of our fleet the Bureau of Ships contribution is $1.94 billion.

. . . For purpose of advanced planning, what are our future trends?

The general trends in ships that may bring significant changes in our work are: First, the need to send our submersibles—both warships and research craft—to ever increasing depths. Second, the Navy's need to find vehicles capable of reasonably high carrying capacity and truly high speed, up to 100 knots. Third, a continued uprating of ships of the same type we are building today.

The search for greater depths and higher speeds emphasizes the need for higher strength and lighter material for ships' hulls. Investigations of improved steels, titanium, aluminum, glass reinforced plastics, and even solid glass will result in the use of increasing quantities of these materials.

Our efforts to develop practical ships in the 30 to 100 MPH category are centered about new hull forms. We will continue to develop hydrofoil ships. . . .

Research and development of ground effects machines will attempt to increase the size and seaworthiness of this hull form.

Closely related to these projects is the Marine Corps Amphiban Development Program. We need faster, lighter assault vehicles and Amphibious Support Vehicles capable of carrying 10,000 pound payloads at speeds of 30-35 knots. . . .

What are we buying in terms of types and quantities of ships? FY 1965 finds us in an era, as many of you know, of large procurements of amphibious warfare ships and auxiliary type support ships. Faced with block obsolescence of our World War II support ships, we are replacing some and creating new prototypes of others. At the same time, we are performing major conversions of World War II ships to extend their lives and allow a more orderly replacement program the next time around.

This program continues into FY 1966, changed to some degree, but with no major shift of emphasis.

. . . Now, to approach the future from another aspect, we can examine the principal systems in our ships. The trends identified here will be reflected in both new construction and in modernization programs.

In the field of electronics, the trend is to integration. The large number of tasks, the limited number of prime locations and the interferences between separate systems require integration of the ship's total electronics suit.

Specifically—in the field of shipboard radar—a single radar system which will provide all the radar functions is required. These functions may include search, detection, tracking, weapons designation, missile guidance and air control. . . .

System effectiveness for complete mission reliability will receive close attention. Electronics systems will be required to remain on the air, or ready for use, for long periods with little or no time allowed for repair of failures. Automatic fault location and back-up systems will contribute to this goal.

In the midst of increasing equipment complexity we must keep the human tasks down to reasonable levels. . . .

In the area of propulsion systems our trends will be toward increased use of gas turbines, increased automation of our propulsion systems and, further in the future, increased use of nuclear power.

. . . Automation in propulsion plants is now being incorporated in some ship designs. . . . Our objectives are the reduction of operating personnel and the improvement of reliability and operational capability. As we gain experience, we expect to automate other shipboard systems.

The Naval Nuclear Propulsion Program headed by Vice Admiral H. G. Rickover is a Joint Navy-Atomic Energy Commission effort to develop improved reactor plants. This program is studying plants in a wide range of power ratings for installation in ships, ranging from small submarines to large aircraft carriers.

One important project in this program is the development of a new type nuclear plant for a submarine. . . .

In the Nuclear Surface Ship Development Program, the Department of Defense and Atomic Energy Commission have decided to proceed with the development of a very high-powered, long life reactor for application to a two-reactor nuclear powered aircraft carrier. . . .

A third major area is that of cargo handling. In the interests of both efficiency of operation and reduced manpower, the trend will be toward increased mechanization in handling of all types of commodities. . . .

The requirements for amphibious operations demand that our ships have both a greater lift capability and a higher speed of unloading via both surface and air. In both amphibious and replenishment operations, we will also see a continued increase in the use of helicopters.

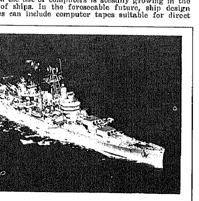
Now, for a few important trends that apply to ships and to ship systems.

The Navy's interest in controlling ship's noise—both to avoid detection and to improve our own sensors ability—will continue. Quieter ships are vital to our anti-submarine warfare effort, to submarine improvements and to our mine-sweeper program.

. . . A program of increasing importance to component manufacturers is our program to shock harden the combatant ships of the U. S. Navy. Our objectives in this program are to produce a ship which can absorb the blast and shock effects of nuclear and conventional weapons to at least the same degree as its human operators. . . .

Design work study is an analytical technique based upon simplification and method study techniques that all of you have utilized in plant operations. The primary object is to design a ship to require the minimum number of personnel and the minimum effort on their part for operation and maintenance.

Computers are already a vital part of our ships' system, and the use of computers is steadily growing in the design of ships. In the foreseeable future, ship design packages can include computer tapes suitable for direct



USS Boston (CAG-1) Under Way.

use by the shipbuilder in automated production operations such as plate cutting.

So far I have been talking of ships and the equipment which we expect to find in them in the future. I think you also will be interested in the manner in which we plan to obtain these items.

With the trend toward increased competition we have adopted two new methods for effecting it: Two-step formal advertising and multi-year procurement. Two-step formal advertising indicates, with a technical proposal, whether the potential bidders really understand the work. Then the second step, bidding, insures favorable prices to the greatest advantage in the procurement of electronics equipment, whereas the multi-year procurement method can be used for almost any items. . . .

Because we are already approaching the limit of complexity which the crews can maintain, we must increase the reliability and maintainability of future equipment. We are not just asking you to do this: Our contracts will require it.

Here are some of the steps which we will take in establishing this program.

We will consider reliability and maintainability early in the conceptual and design phases.

Specifications, product descriptions and contracts will include specific minimum requirements as one of the major engineering factors.

The contractor will have to demonstrate that acceptable levels have been met in the finished product.

The procedures for monitoring progress are not firmly established. They will be developed as we learn how best to obtain these two vital characteristics.

. . . In conclusion, we know that major advances in technology will continue, and that we need answers to lots of questions in that crystal ball. As Admiral Galantin and Admiral Christensen have said, we can always use new ideas and new talent. Let us have yours.

Navy Sources of Industrial Information

The new Naval Material Support Establishment comprises the Bureau of Naval Weapons, Bureau of Ships, Bureau of Supplies and Accounts and Bureau of Yards and Docks under the direction of the Chief of Naval Material, Vice Admiral I. J. Galantin, USN. These bureaus buy weapons systems, goods and services from private industry amounting to nearly nine billion dollars yearly and close to 95 per cent of Navy expenditures for procurement.

Fielding industry requirements for information related to these expenditures in the Office of the Chief of Naval Material, located in Room 1411, Main Navy Building, Washington, D. C. 20360, are the following:

Capt. Bernard S. Solomon, USN
Public Affairs Officer, MAT 00D
Telephone: OXford 6-4822 & OXford 6-3001

Cdr. Ted J. Bush, USN
Asst. Public Affairs Officer, MAT 09D1
Telephone: OXford 6-3001 & OXford 6-3312

Mr. Kenneth P. Borgen
Industrial Information Officer, MAT 09D3
Telephone: OXford 6-2493 & OXford 6-3907

Among other responsibilities, these individuals prepare and disseminate factual material on Navy business operations to contractors and technical journals; provide guidance to contractors on public information material and coordinate the security review; and approve and coordinate industrial information events such as Research and Development Clinics, Procurement Conferences and Advanced Planning Briefings for Industry.

Repository for Canceled Specifications Established by DOD in Philadelphia

The Defense Department has established an archival service for industry on superseded military specifications and other standard documents required for contractual obligations. Canceled documents to be made available by this new archival service are those which are either listed in, or have been deleted from, the DOD Index of Specifications and Standards.

This repository will become operational on July 1 in conjunction with the Defense Single Distribution Point for Specifications at the Naval Supply Depot, Philadelphia, Pa.

For ease of handling and retrieval, microfilm will be used for storage and record of the canceled documents, thereby eliminating need for large volumes of old printed copies. Records of approximately 20,000 such documents are expected to be on hand on the opening date. This quantity probably will increase at a rapid rate since about 35,000 specifications and related documents are stocked and issued, a large proportion of which are continually subject to change to meet new requirements.

The archival service will provide, for the first time, a single source for copies of old specifications issued by all military services. There often are urgent demands for such individual documents which, even though not used for future procurement, still are effective on contracts which have been in progress for several years or which cover replacement parts in equipment used for a number of years.

The Office of Technical Data and Standardization Policy, of the Office of the Assistant Secretary of Defense (Installations and Logistics), is issuing procedures for use of the new service. These provide that industry requiring copies of canceled documents in fulfillment of contractual obligations may obtain these from the Director, Navy Publications and Printing Service Office (NPPSO-4ND), Philadelphia, Pa. Requests must be accompanied by a certification of the need by the appropriate contracting officers, who may submit requests directly to the above Navy office.

ARPA Selects Contractor For Project ALTAIR

The DOD Advanced Research Projects Agency, ARPA, has selected Sylvania Electric Products, Inc., of Waltham, Mass., to design, fabricate and install a new experimental radar on Roi Namur Island in the Kwajalein Atoll.

Designated Project ALTAIR (ARPA Long Range Tracking and Instrumentation Radar), the experimental radar will be used in conjunction with already operating instrumentation in the area. It is anticipated that the project will further increase the capability of Project PRESS to conduct studies of the physics of vehicles reentering the earth's atmosphere. Project ALTAIR will be more sensitive and will operate at different frequencies than radars now in use in ARPA's ballistic missile defense research program.

The total funding of the project will approximate $20 million, exclusive of military construction funds. Of this amount, Sylvania will receive initial funding of approximately $12 million for the fabrication of hardware. Some portion of these funds will be utilized for subcontracting for the design and fabrication of certain components.

The project will be monitored for ARPA by the U.S. Army Missile Command at Huntsville, Ala. The Lincoln Laboratory of Massachusetts Institute of Technology, Technical Director of Project PRESS, will act as ARPA's technical consultant.

San Bernardino AMA Phase Out Announced

Detailed plans for the phasing out of logistics operations at San Bernardino Air Materiel Area (AMA), Norton, AFB, Calif., have been released by the Air Force Logistics Command (AFLC).

This action is the first step in implementing the Secretary of Defense's directive of November 19, 1964, closing San Bernardino AMA. Phase I closing plans for Middletown, AMA, Olmsted AFB, Pa., and Mobile AMA, Brookley AFB, Ala., were announced earlier.

San Bernardino phase out differs from Middletown AMA and Mobile AMA in that Norton AFB is not scheduled to close. With AFLC activities moving from Norton, responsibility for the base operation will shift from AFLC to the Military Air Transport Service effective July 1, 1967.

The following is a list of major responsibilities to be relocated from San Bernardino AMA during the period July 1965 to December 1965:

To Ogden AMA, Hill AFB, Utah:

- Materiel management and maintenance for Titan II (System Support Manager/Inventory Manager).
- Materiel management for Titan II Aerojet Engines (FSC 2845 A), Titan II (Weapon System Storage Site) and Titan III (System Support Manager/Inventory Manager).
- Maintenance for Titan II Trailers (FSC 2330), Gas Generating Equipment (FSC 3655), Lubrication and Fuel Dispensing Equipment (FSC 4930), Electrical Control Equipment (FSC 6110), Batteries (FSC 6140) and Gas Cylinders (FSC 8120).

To Sacramento AMA, McClellan AFB, Calif.:

- Materiel management and support for P437 and Booster and Rocket Engine.
- Procurement for Atlas Boosters (LVIII), Titan I Boosters (LVIV), Atlas Rocketdyne Engine (FSC 2845–RA) and Special Procurement Projects.
- Materiel management and support for Judge Advocate General AMA Claims, Logistics Field Assistance, Supply Distribution Point Relocation (new procurements of C–133 aircraft spares to new location), B–45 aircraft and Management Engineering Function (portion).
- Maintenance for Precision Measuring Equipment Area Support.

National Armed Farces Museum Planned

A National Armed Forces Museum, graphically depicting the accomplishments of the Armed Forces in war and peace, will be built on a 340-acre tract of land bordering the Potomac River at Fort Washington, Md.

In concept the museum would seek to inspire the public with a meaningful sense of the accomplishments of the Nation's Armed Forces, their contributions to national development and the role played by our people in providing the sinews of defense for maintaining a free, peaceful and independent society and culture in the United States of America.

The museum would feature a park complex with reconstructions of fortifications, earthworks, trenches and other military and naval facilities characteristic of memorable periods in our Nation's history. The park area would also have a ship basin in which to preserve and exhibit significant specimens of naval vessels.

A central exhibit building, specially designed to house large pieces of military equipment, would include a study center for scholarly research into the meaning of war and its effect on civilization.

A large parade ground would accommodate parades, tattoos, military reenactments and similar spectacles.

Portraying the Armed Forces' peacetime contributions would be displays in science, nuclear energy, terrestrial and space exploration, electronics, engineering, aeronautics and medicine.

Dr. Hubertus Strughold Receives Aerospace Medical Award

Dr. Hubertus Strughold, chief scientist of the Aerospace Medical Division, Air Force Systems Command, is this year's recipient of the Aerospace Medical Association's Louis H. Bauer Founders Award. The award is named for the late Louis H. Bauer, the "father of aviation medicine," one of the Association's co-founders and first president. It is given annually for the most significant contribution in space medicine.

Dr. Strughold is often referred to as "The Father of Space Medicine." In 1949 he was placed in charge of the first full-fleged Department of Space Medicine at the USAF School of Aviation, which is now known as the Department of Bioastronautics, USAF School of Aerospace Medicine, Brooks AFB, Tex.

Under his guidance, the Department of Space Medicine began development of the medical groundwork for the man in space program, directing the first studies of the environmental problems of space cabins in the world's first space cabin simulator.

During 1928-29 Dr. Strughold performed research at Western Reserve University, Cleveland, Ohio, and the University of Chicago and then returned to Germany where he was born and educated. He came back to the United States in 1947 to join the staff of the School of Aviation Medicine, now the USAF School of Aerospace Medicine.

Unsalicited Proposals U.S. Navy

(*Continued from Page* 4)

rather than the rule. Organizations which support applied research and exploratory development are not as sharply delineated as the basic research organizations and it is usually more difficult to find the cognizant group.

In addition, any proposal which has a military application should be based on a careful investigation of the following aspects of the work: Is the military application a new one or an improvement of current practice? If so, does it appear that the successful completion of the work will provide a technique or equipment which will substantially alter our military capability? Is it technically feasible to integrate the new technique or equipment with existing systems?

In other words, the prospective contractor who investigates the military aspects of a new concept can often decide for himself whether or not the idea is worthy of the expense of a formal proposal. Since the military specialist who processes the proposal follows somewhat the same procedure, he is at once impressed with a proposal which shows signs of having been prepared as the result of such an analysis.

Many applied research proposals are technically complicated and they extend the state of the art to such an extent that the final answers are available only after a meticulous investigation. On the other hand, a first look at some proposals immediately raises some questions which a prospective contractor should have been able to answer by a review of existing knowledge or a simple experiment. Any such information voids in a proposal are definitely a handicap to acceptance and any assumption is susceptible to rejection where there is doubt as to the validity of any of its components. It is not contended that the prospective contractor should undertake a research program before he submits a proposal, but it is definitely to his advantage to provide technical information to the extent that the reviewer can reject only on the basis of specifics.

One last item of the formal proposal which should be handled with care—the costs involved. With decreasing military budgets, good technical proposals with unrealistic financial figures are worthy of only verbal support and of no use to either the prospective contractor or the military.

In summation, the successful contractor in the applied research and exploratory development area is the one capable of producing new or novel military applications of research and technical information and processing the complete technical investigation at a reasonable cost.

BIBLIOGRAPHY

DOD Instruction 4270.30, "Standards and Criteria for Permanent Construction—General," April 15, 1965. Sets forth basic guidance and criteria for the design of military facilities of permanent construction other than family housing.

DOD Directive 5010.4, "System/Project Management," May 4, 1965. Establishes DOD policy governing the use and application of System/Project Management.

> DOD directives and instructions may be obtained from:
> Publications Distribution Branch
> Office of the Secretary of Defense
> Room 3B938 The Pentagon
> Washington, D.C. 20301

Armed Services Procurement Regulation (ASPR) Revision No. 11, June 1, 1965. Includes (1) updated Section I, Part 9, reflecting revised policy with respect to responsibility of contractors which was issued in Defense Procurement Circulars #3 and #9; (2) ASPR Appendix containing uniform procedures for conducting the pre-award surveys; and (3) DD Form which will be completed by Government personnel conducting pre-award surveys.

Defense Procurement Circular No. 27, April 29, 1965. December 1964 Edition of Standard Form 33, Invitation, Bid, and Award (Supply Contract) and Standard Form 33A, Bidding Instructions, Terms, and Conditions (Supply Contract); and Warranty clauses, ASPR 1-324.6(a).

Defense Procurement Circular No. 28, May 24, 1965. ASPR Section XXI—Procurement Management Reporting System.

> Each Defense Procurement Circular (DPC) is designed to place new or changed policies or procedures in effect prior to publication of an Armed Services Procurement Regulation (ASPR) revision. The items in each circular are cancelled after six months, unless specifically eliminated earlier by a new DPC or by publication in the ASPR. ASPR subscribers will receive Defense Procurement circulars and ASPR revisions through the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Guidelines for Developing and Submitting and Unsolicited Proposal to the Navy Department (NAVMAT P-4201), March 1965.

Guidelines for Preparing More Effective Engineering Proposals (NAVMAT P-4856), March 1965.

> NAVMAT Guidelines are available from:
> Chief of Naval Material (MAT 444)
> Department of the Navy
> Washington, D.C. 20360

Congressional Directory, 89th Congress, January 1965. Beginning with a brief biography of the Vice President, this official directory presents short biographies of each of the Members of the Senate and of the House, listed by States and districts, respectively. Additional data on each of the lawmakers is also included, such as his committee memberships, terms of service, administrative assistant and secretary, and room and telephone number. The directory also lists officials of the courts, the military establishment and other Federal departments and agencies; Governors of States and Territories; foreign diplomats; and members of the press, radio and television galleries. A description of the Capitol building, its grounds and floor plans is included, as are maps of the congressional districts for each state.

Catalog No.

Y4.P93/1:1/89-1	Cloth $3.00
Thumb-Indexed Edition	Cloth $4.75

Pocket Congressional Directory, 89th Congress, January 1965. Photographs of President Lyndon B. Johnson, Vice President Hubert H. Humphrey, officials of the Senate, House, the Capitol, and members of Congress are contained in this volume. It also includes a list of State delegations, and alphabetical lists of the Senators, Representatives and Resident Commissioner, showing home post office and political alinement. 202 p. il.

Catalog No.
Y4.P93/1:1p/89 Cloth $1.75

United States Government Organization Manual, 1965-66. Official organization handbook of the Federal Government.

Catalog No. GS4.109:965 $1.75

NASA Incentive Contracting Guide. This guide has been published to provide authoritative guidance and sound precepts to all personnel concerned with the negotiation and administration of incentive arrangements in NASA contracts. 1965.

Catalog No. NAS1.18:In2/2 $1.00

Proposed Mutual Defense and Development Programs, FY 1966, Summary Presentation to the Congress. Intended to provide members of Congress with a general summary of the mutual defense and development programs proposed for FY 1966, this volume discusses foreign aid in perspective, Alliance for Progress, Near East and South Asia, Far East, Africa, private resources in international development, management improvements, other assistance programs and analysis of the FY 1966 request by funding category. Included in the appendix is the President's Message on Foreign Aid and statistical tables. 1965. 248 p. il.

Catalog No. S18.28:966 $1.00

> Publications that require remittance are available for purchase at U.S. Government Printing Office, Washington, D.C.

The 1965 edition of *United States Aircraft, Missiles and Spacecraft* is now available. This 168-page pictorial book presents a comprehensive account of the aircraft, missiles and space vehicles currently in operation and in production or development in the U.S. aerospace industry. It is published by the National Aerospace Education Council and prepared in cooperation with the Aerospace Industries Association. It may be obtained from the Council at 1025 Connecticut Ave., NW, Washington, D.C. 20036. $2.00.

The following Government research & development reports are available to science and industry through the Clearinghouse for Federal Scientific and Technical Information, U.S. Department of Commerce, Springfield, Va. 22151:

Order *AD 610 210N, A Factor Analytic Approach to Human Engineering Analysis and Prediction of System Maintainability,* Air Force Behavioral Sciences Laboratory, Wright-Patterson AFB, Dec. 1964, 88 pp., $3.00.

Order *AD 613 522N, An Annotated Bibliography on Proficiency Measurement for Training Quality Control,* George Washington University for the Army, June 1964, 29 pp., $2.00.

NOTES FOR EDITORS

Briefed below are some events and projects within the Department of Defense which may be of interest to writers and editors. If further information on any of these topics is desired, please write to Chief, Magazine and Book Branch, Office of the Assistant Secretary of Defense, Public Affairs, Washington, D.C. 20301.

REFAB HOUSING SOUGHT FOR AIR FORCE OVERSEAS FAMILIES

In order to offset the adverse "gold flow" associated with family housing projects overseas, the Air Force is developing a two-story dwelling with three bedrooms, one and a half baths and more than 1000 square feet of living space. It will be prefabricated in the United States and partially preassembled into two compact shipping packages for easy handling and delivery to foreign bases where the house can be quickly assembled.

NEW HELICOPTER MOUNTED GRENADE LAUNCHER DELIVERED

The Army has accepted the first weapon developed specifically for firing 40mm grenades from helicopters. Designated the M-5, the new weapon subsystem is designed to provide helicopters with a suppressive-fire capability. The 200-pound weapon fires a 40mm high explosive grenade at the rate of more than 200 per minute. It is electrically driven, and can be operated by either the pilot or a gunner. First delivery has been made to Aberdeen Proving Ground, Md. Production items will be delivered to field units later this year.

DATA PROCESSING SYSTEM SPEEDS NAVY SUPPLY SYSTEM

Since January 1963 the Navy Supply Corps has been rapidly expanding its Uniform Automatic Data Processing System (UADPS) for stock points so that today it is operating seven locations with two more planned for the near future. The Navy's Chief of Supplies and Accounts believes UADPS has brought the Navy "a long way toward assuring optimum supply response and control." The magnitude of the system can best be illustrated by the volume just one of the seven stock control points handles. The Norfolk Naval Supply Office carries 750,000 items and makes approximately 3,400,000 issues a year. The functioning of UADPS includes: inventory control; financial inventory control; material movement control; stores, cost, allotment, appropriation and payroll accounting. The basic mission of UADPS is to speed the delivery of supplies to the customer—the ships of the fleet.

AIR NATIONAL GUARD AND RESERVE CREWS FLYING AIRLIFT TO VIETNAM

Air National Guard and Air Force Reserve crews stationed in various units throughout the country are now flying volunteer airlift missions from the United States to South Vietnam. Since 1961, Air Guardsmen have flown more than 200 missions to Southeast Asia carrying cargo and equipment in C-121 and C-97 aircraft. Air Force Reserve crews in C-124's started flying missions to Saigon in February of this year. They are now augmenting the Military Air Transport Service (MATS) trans-Pacific airlift to the Philippines and Southeast Asia.

NAVY REVERTS TO 120-YEAR-OLD PRACTICE

The Navy Oceanographic Office has begun contracting with commercial ships to gather extensive oceanographic data—an enlargement of a technique first used by Matthew Fontaine Maury, the Navy's first oceanographer 120 years ago. Participating commercial lines will make bathythermograph drops twice daily which will measure temperature versus depth on a glass slide. U.S. Navy ships regularly provide the Oceanographic Office with this information. The program is another part of the Navy's expanded effort to learn the mysteries of the sea.

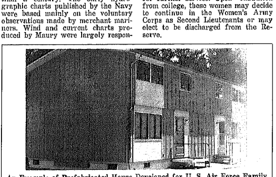
Commercial shippers have voluntarily supported the Navy for better than a century. The early hydrographic charts published by the Navy were based mainly on the voluntary observations made by merchant mariners. Wind and current charts produced by Maury were largely responsible for the early speed records of Yankee clipper ships.

NEW TECHNIQUE FOR TRAINING C-5A MAINTENANCE CREWS

The Technical Training Center at Sheppard AFB, Tex., has been named the prime technical training center for the C-5A cargo aircraft. It will conduct training of maintenance personnel in certain specialties peculiar to the equipment of the aircraft and supervise the training at other ATC centers. The new technique in procurement necessitates long-range planning and training that must parallel the development of a new aircraft or new operational system. Purpose of the training program is to assure that qualified maintenance personnel are available when the first operational aircraft is delivered.

THE CHOICE IS HERS

This summer—from July 11 through August 6—120 selected young women between their junior and senior years of college will attend the Women's Army Corps College Junior Course at Fort McClellan, Ala. The course is designed to enable a college woman to find out if life as a WAC officer is for her. During four weeks of active duty, these college juniors from all fifty states will be cadet corporals in the Enlisted Reserve and receive $122.30. All transportation as well as uniforms, meals and medical expenses will be paid by the Army. The summer course in no way obligates the woman for further service. Upon graduation from college, these women may decide to continue in the Women's Army Corps as Second Lieutenants or may elect to be discharged from the Reserve.



An Example of Prefabricated House Developed for U. S. Air Force Family Housing Projects (See first item above)

Patents, Proprietory Rights & Military Equipment

(*Continued from Page* 2)

termining the division of rights in inventions made under a contract, to the contribution made by firms with a record of sales of military items to foreign governments or international organizations, or of licensing in connection therewith. Although there appears to have been some increase in the use of the "title" clause, it is expected that the "license" clause will continue to be utilized in a preponderance of cases.

In the "license" situation, the research and development contract leaves the ownership of inventions resulting from performance of work under the contract to the contractor, with the Government taking a license for all "Governmental purposes," including the Military Assistance Program. In addition, however, the Government is accorded "the right to grant licenses to any foreign government or international organization specifically for use in programs established by International Agreements for research, development, or production of weapons or equipment for mutual defense." The quoted language, which is commonly known as the Government's "sublicensing authority," has been criticized by various segments of U. S. defense industry. The major objection has been that the U. S. firm can never be sure that the Government will not, in connection with a specific program, decide to convey a royalty-free license under this authority. At least conceivably, the Government could thus cut the ground from under a U. S. contractor who had incurred expenses in filing for and maintaining patent coverage in foreign countries and in promoting license arrangements. Faced with this uncertainty, the U. S. contractor cannot afford, it is argued, to invest the time and money needed to patent inventions and develop profitable licensing arrangements.

On the other hand, it is understandable that the Government should desire to have at its disposal the tools it needs to establish cooperative programs with other friendly governments in the field of mutual defense, without undue hindrance from U. S. firms which might possibly prefer not to accord licenses on any terms to potential overseas competitors.

A Working Group on Patents, consisting of both Government and industry representatives, made a study recently of these and other considerations and concluded that a fair balance could be achieved by amending the "sublicensing authority" in such a way that (1) the U. S. contractor-owner of the inventions would receive fair compensation from the foreign licensee whenever the Government invoked the sublicensing authority and (2) the sublicensing authority could in any event only be utilized with respect to foreign governments which did not under their own law have the power to infringe patents for defense or governmental purposes. Final Defense Department action on this recommendation has not yet been taken.

With respect to the Defense Department's policy regarding the procurement of rights in technical data under research and development contracts, considerations analogous to those outlined above have animated the discussion. Again, the essence of the position taken by many U. S. industry representatives is that the Government should take no greater rights in technical data delivered under a contract than is strictly necessary for the fulfillment of Government purposes. The greater the "rights" in data which are left in the contractor, the greater will be the latter's incentive, and negotiating strength, in marketing this technology abroad. It is argued that there is
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by both Government and industry, to draw a basic distinction according to whether the data pertains to an item which was developed at private expense, or was the result of Government-financed research and development; in the latter case, the Government's "unlimited rights" entitled to it to use or dispose of the data for any purpose whatever; (2) it is difficult, if not impossible, to construct a tenable legal theory under which data which might be used by the Government for any legitimate Governmental purpose could still be legally protectible in other circumstances by the contractor; and (3) given the amount of valuable know-how, technical assistance and proprietary data which U. S. contractors are even now in a position to offer to potential licensees, it is not clear how important, or even desirable, it might be to increase the contractor's control over the type of data that is now being delivered to the Government without restriction.

The last word in this difficult field is yet to be spoken. But it is clear that the imperatives of the military export program will continue to make themselves felt in the formulation of Defense patent and data procurement policy.

Major Crossroads in Space Program

(*Continued from Page* 13)

We are only one of the many organizations sponsoring this kind of research. I am frequently called on to answer why the Air Force should be involved in basic research at all. More specifically, when discussing the space program, I am asked why the Air Force should participate in space research when it is specifically included in NASA's charter and they are supporting it so heavily.

First of all, at its most fundamental level, it is frequently difficult to determine what *is* a space science. Plasma physics may ultimately lead to better aircraft communications, or it may lead to improved space propulsion.

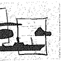
Probably more pertinently, however, I look upon my organization as the Air Force's window on science. OAR is a relatively small organization, and we do only a small percentage of the total research of potential interest to the Air Force. But by doing that small fraction, we act as the Air Force's eyes and ears, and interpreters and advisors on the whole world of science, wherever it may be going on. And to perform this function, I am convinced that we must be *active* participants, not merely passive observers reading technical papers.

It is in this sense that I view our relationship with NASA.

Fundamental knowledge is politically neutral. Given a basic knowledge of nuclear physics, you can construct a nuclear power plant or an atom bomb, or both, depending upon the political decisions of the Government in power. We, in the military, need new knowledge in order to perform our current military tasks more effectively, to be able to perform tasks we can project for the future and to prevent technological surprise. But the knowledge we seek is not military knowledge. It is universal knowledge, with national and even global implications. It is for this reason that the Military Services can and do cooperate so closely with NASA and other civilian research agencies of the Federal Government in our search for basic knowledge about the space environment. Although we want this knowledge for whatever military purposes we can find for it, it is the same knowledge that is sought for different purposes by scientists in the universities, industry and other research organizations.

I haven't attempted to answer the question of which direction our space program should take in the future. Even if I could, I wouldn't attempt it, for whether you are a scientist, an engineer, a manager, a businessman, a public servant, or a teacher, you, collectively, are the ones who are going to have to help make these decisions.

I have tried to indicate that, in order to make these decisions intelligently, rationally and objectively, we are going to require more information—information at the basic, building-block level of human knowledge. The decisions to date have not been easy. Those in the future are going to be much more difficult and complex.



DEFENSE PROCUREMENT

Contracts of $1,000,000 and over awarded during month of May 1966:

DEFENSE SUPPLY AGENCY

3—McCord Corp., Detroit, Mich. $1,147,250. 325,000 steel helmets. Detroit. Defense Clothing and Textile Supply Center, Philadelphia, Pa.

4—Standard Oil Co. of California, Western Operations, Inc., San Francisco, Calif. $3,924,500. 1,650,000 barrels of special fuel oil for the Navy. Defense Fuel Supply Center, Washington, D.C.

—Socony Mobil Oil Co., Inc., New York City. $1,050,090. 735,000 barrels of special fuel oil. Defense Fuel Supply Center, Washington, D.C.

7—Socony Mobile Oil Co., Inc., New York City. $4,197,293. Gasoline and fuel oil. Defense Fuel Supply Center, Washington, D.C.

—American Oil Co., Chicago, Ill. $2,048,587. Gasoline and fuel oil. Defense Fuel Supply Center, Washington, D.C.

19—Standard Oil Co. of California, Western Operations, Inc., San Francisco, Calif. $5,011,300. 275,000 barrels diesel marine fuel oil and 1,650,000 barrels Navy special fuel oil. Defense Fuel Supply Center, Washington, D.C.

—American Oil Co., Chicago, Ill. $2,884,350. 895,000 barrels diesel marine fuel oil. Defense Fuel Supply Center, Washington, D.C.

—Richfield Oil Corp., Los Angeles, Calif. $1,686,282. 282,000 barrels Arctic diesel fuel oil, 30,000 barrels diesel marine fuel oil and 200,000 barrels Navy special fuel oil. Defense Fuel Supply Center, Washington, D.C.

—Shell Oil Co., New York City. $1,361,400. 200,000 barrels Type II automotive gasoline and 100,000 barrels Type I automotive gasoline. Defense Fuel Supply Center, Washington, D.C.

21—Richfield Oil Corp., Los Angeles, Calif. $9,722,790. 67,200,000 gallons aviation gasoline. Defense Fuel Supply Center, Washington, D.C.

—Cities Service Oil Co., New York, N.Y. $6,598,127. 50,400,000 gallons aviation gasoline. Defense Fuel Supply Center, Washington, D.C.

—Socony Mobil Oil Co., Inc., New York, N.Y. $6,199,417. 47,829,500 gallons aviation gasoline. Defense Fuel Supply Center, Washington, D.C.

—Standard Oil of California, Western Operations, Inc., San Francisco, Calif. $5,267,682. 36,994,800 gallons aviation gasoline. Defense Fuel Supply Center, Washington, D.C.

—Continental Oil Co., Houston, Tex. $4,785,010. 36,743,000 gallons aviation gasoline. Defense Fuel Supply Center, Washington, D.C.

—Tidewater Oil Co., New York, N.Y. $4,262,280. 33,000,000 gallons aviation gasoline. Defense Fuel Supply Center, Washington, D.C.

—Phillips Petroleum Co., Bartlesville, Okla. $3,794,185. 29,471,000 gallons aviation gasoline. Defense Fuel Supply Center, Washington, D.C.

—Tidewater Oil Co. of Los Angeles, Calif. $3,743,625. 27,300,000 gallons aviation gasoline. Defense Fuel Supply Center, Washington, D.C.

—Standard Oil Co. (Kentucky), Louisville, Ky. $2,841,350. 22,341,000 gallons aviation gasoline. Defense Fuel Supply Center, Washington, D.C.

—Union Oil Co. of California, Los Angeles, Calif. $4,354,906. 30,956,000 gallons aviation gasoline. Defense Fuel Supply Center, Washington D.C.

—Texas City Refining, Inc., Texas City, Tex. $2,214,702. 17,010,000 gallons aviation gasoline. Defense Fuel Supply Center, Washington, D.C.

—American Oil Co., Chicago, Ill. $2,037,729. 14,179,000 gallons aviation gasoline. Defense Fuel Supply Center, Washington, D.C.

—Humble Oil and Refining Co., Houston, Tex. $2,021,007. 13,353,000 gallons aviation gasoline. Defense Fuel Supply Center, Washington, D.C.

—Shell Oil Co., New York, N.Y. $1,846,180. 13,038,000 gallons aviation gasoline. Defense Fuel Supply Center, Washington, D.C.

—Shamrock Oil and Gas Corp., Amarillo, Tex. $1,347,380. 10,765,000 gallons aviation gasoline. Defense Fuel Supply Center, Washington, D.C.

—Ashland Oil and Refining Co., Ashland, Ky. $1,133,048. 7,890,000 gallons aviation gasoline. Defense Fuel Supply Center, Washington, D.C.

24—General Cable Corp., New York, N.Y. $1,081,916. 20,473 reels of telephone cable. Providence, R.I. Defense Industrial Supply Center, Philadelphia, Pa.

—Augusta Bag and Burlap Co., Augusta, Ga., $1,340,574. 7,020,800 sand bags. Augusta. Defense General Supply Center, Richmond, Va.

26—Humble Oil and Refining Co., Houston, Tex. $3,031,800. 900,000 barrels of diesel fuel oil. Defense Fuel Supply Center, Washington, D.C.

—Socony Mobil Oil Co., Inc., New York City. $1,790,260. 500,000 barrels diesel fuel oil. Defense Fuel Supply Center, Washington, D.C.

27—Socony Mobil Oil Co., Inc., New York City. $2,235,000. 1,035,000 barrels of fuel oil. Defense Fuel Supply Center, Washington, D.C.

28—Standard Oil Co. of California (Western Operations, Inc.), San Francisco, Calif. $1,245,440. 8,900,000 gallons of RP–1 rocket fuel. Defense Fuel Supply Center, Washington, D.C.

ARMY

3—Lockheed Aircraft Corp., Lockheed Electronics Co. div., Clark, N.J. $1,099,000. Non-personal technical port services on range instrumentation equipment. White Sands Missile Range, N. M. White Sands Missile Range (AMC), N. M.

—Peter Kiewit Sons Corp., Vancouver, Wash. $9,465,721. Union Pacific Railroad relocation, Part II, Hinkle-Spokane main line. Lower Monumental Lock and Dam Project, Pasco, Wash. Engineer District, Seattle, Wash.

—Eltra Corp., Prestolite Co., Div., Toledo, Ohio. $1,047,487. Engine generator regulators for tactical and combat vehicles. Decatur, Ala. Army Tank Automotive Center (AMC), Warren, Mich.

—Browning Construction Co., San Antonio, Tex., $1,319,850. Renovation of Camp Gary, Phase II. Camp Gary, San Marcos, Tex. Engineer District, Fort Worth, Tex.

4—North American Aviation, Inc., Space and Information Div., Downey, Calif. $2,115,000. Research to develop a mobile medical laboratory unit to support a field army in laboratory sciences discipline. Downey and El Segundo, Calif. Office of the Surgeon General, U.S. Army R&D Command (AMC), Washington, D.C.

Contract Index

Contract information is listed in the following sequence: Date—Company—Dollar Value—Material—Location of Work Performed—Contracting Agency

6—**Philco Corp.**, Philadelphia, Pa. $2,000,000. Classified electronics equipment. Philadelphia. Procurement Div. of Army Electronics Command (AMC), Philadelphia, Pa.

7—**Hamilton Watch Co.**, Lancaster, Pa. $1,350,000. Ordnance items. Lancaster. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**General Electric Co.**, Burlington, Vt. $5,088,124. Vulcan pods—a detached system for mounting 20mm automatic guns to bomb rack of aircraft. Burlington. Boston, Mass., Procurement District (AMC).

—**Radio Corp. of America, Defense Electronics Products Div.**, Burlington, Mass. $1,250,800. Phase II of multi-system test equipment for the SHILLELAGH, LANCE and TOW systems. Burlington. U.S. Army Missile Command (AMC), Huntsville, Ala.

10—**Specialty Electronics Bevelopment Corp.** $1,046,555. 288 manual telephone switchboards and 333 telephone signal assemblies. Glendale. Procurement Div. of Army Electronics Command, Philadelphia, Pa.

—**Arvin Industries, Inc., Electronic Systems Div.**, Columbus, Ind. $1,291,648. Coder equipment components. Columbus. Procurement Div. of Army Electronics Command, Philadelphia, Pa.

—**PrePakt Concrete Co.**, Renton, Wash. $1,340,097. Repair of the navigation lock on the Ice Harbor Lock and Dam, Snake River Project. Pasco, Wash. District Corps of Engineers.

11—**Matanuska Maid, Inc.**, Anchorage, Alaska. $1,353,006. Milk. USARAL Support Command and Fort Richardson, Alaska.

—**Fowler's Dairy Farm**, Shaw Creek, Alaska. $21,080. Milk. USARAL Support Command and Fort Richardson, Alaska.

—**Arden North Star Dairy, Inc.**, Anchorage, Alaska. $669,990. Milk. USARAL Support Command and Fort Richardson, Alaska.

—**Sperry Rand Corp., Sperry Phoenix Co., div.**, Phoenix, Ariz. $1,170,076. Gyro magnetic compass sets with ancillary parts for Army aircraft. Phoenix. U.S. Army Electronics Command (AMC), Fort Monmouth, N.J.

12—**Smith and Sapp Construction Co.**, Orlando, Fla. $1,616,970. Construction alterations to existing spacecraft facilities at Cape Kennedy, Fla. Canaveral District Corps of Engineers, Merritt Island, Fla.

—**Martin-Marietta Corp., Martin Co., div.**, Orlando, Fla. $11,063,752. Research and development work on Project RADA (Random Access Discrete Address). Orlando, Fla. Electronics Command (AMC), Fort Monmouth, N.J.

—**Umpqua River Navigation Co.**, Reedsport, Ore. $4,899,000. Work on Grays Harbor, Wash., Project. Aberdeen, Wash. U.S. Army Engineer District, Seattle, Wash.

13—**Space-General Corp.**, El Monte, Calif. $1,000,000. Advanced development of a detection device for biological research. El Monte. U.S. Army Biological Laboratories (AMC), Fort Detrick, Md.

14—**R. A. Heintz Construction Co.**, Portland, Ore. $2,776,250. Work on John Day Lock and Dam Project. The Dalles, Ore. District Corps of Engineers, Walla Walla, Wash.

—**Bulova Watch Co., Inc.**, Flushing, N.Y. $1,508,800. Rocket ammunition fuzes. Flushing. New York City Procurement District (AMC).

—**HRB Singer, Inc.**, State College, Pa. $9,387,226. Infrared surveillance systems and associated support equipment for use with the OV/1C MOHAWK aircraft. State College. Procurement Div. of Army Electronics Command (AMC), Philadelphia, Pa.

—**International Harvester Co.**, Washington, D.C. $1,098,210. 160 commercial type dump trucks. Springfield, Ohio. Army Tank Automotive Center (AMC), Warren, Mich.

—**Teletype Corp.**, Skokie, Ill. $1,000,000. Classified electronic equipment. Skokie. U.S. Army Electronics Command (AMC), Fort Monmouth, N.J.

17—**Canadian Commercial Corp.**, Ottawa, Ontario. $1,099,740. 793 gasoline driven generator sets. E. P. Electric Products Co., Ltd., Montreal, Quebec. Engineer Procurement Office, Chicago, Ill.

—**Fisher Construction Co.**, Houston, Tex. $1,435,110. Construction of the crew systems facility at the Manned Spacecraft Center, Houston, Tex. District Corps of Engineers, Fort Worth, Tex.

—**Firestone Tire and Rubber Co.**, Akron, Ohio. $1,018,774. Shoe assemblies for the M113 personnel carrier. Noblesville, Ind. Army Tank Automotive Center (AMC), Warren, Mich.

18—**Kaiser Jeep Corp.**, Toledo, Ohio. $2,323,353. 111 five-ton wrecker trucks. South Bend, Ind. Army Mobility Command (AMC), Warren, Mich.

19—**Philco Corp., Aeronutronic Div.**, Newport Beach, Calif. $1,296,000. Engineering and design of an adaptation of the SHILLELAGH Missile System to replace the present 105mm gun in the M60 Tank. Army Missile Command (AMC), Huntsville, Ala.

—**SCM Corp., Kleinschmidt Div.**, Deerfield, Ill. $1,032,008. 248 teletypewriter sets with ancillary items. Deerfield. Electronics Command (AMC), Fort Monmouth, N.J.

21—**Peter Reiss Construction Co., Inc.**, Forest Hills, N.Y. $1,428,000. Site preparation for Washington Hall barracks complex at U.S. Military Academy, West Point, N.Y. Engineer District, New York, N.Y.

—**Chrysler Motor Corp.**, Detroit, Mich. $6,412,000. 4,000 ¾-ton cargo pickup trucks. Warren, Mich. Army Tank Automotive Center (AMC), Warren, Mich.

—**Honeywell, Inc.**, Hopkins, Minn. $1,293,545. 40mm cartridge fuzes and special tooling. Twin Cities Army Ammunition Plant, New Brighton, Minn. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Ingraham Co.**, Bristol, Conn. $7,697,008. Metal parts for fuzes. Bristol, Terryville and Waterbury, Conn. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

24—**Weatherhead Co.**, Cleveland, Ohio. $2,512,756. 105mm projectiles. Cleveland. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Fryd Construction Corp.**, Miami Beach, Fla. $1,750,557. Construction of a composite medical facility at Homestead AFB, Fla. District Corps of Engineers, Jacksonville, Fla.

—**Greenhut Construction Co., Inc.**, Pensacola, Fla. $3,363,903. Construction of a three-story composite medical facility at Eglin AFB, Fla. District Corps of Engineers, Mobile, Ala.

—**G. H. Lindekugel and Sons, Inc.**, Mitchell, S.D. $1,789,707. Work on Saylorville Dam and Reservoir, Des Moines River, Iowa, Project. Des Moines, Iowa. U.S. Army Engineer District, Rock Island, Ill.

25—**E. E. Black, Ltd.**, Honolulu, Hawaii. $2,101,000. Construction of 100 units of noncommissioned officers family housing, including supporting utilities, site preparation and carports, at Hickam AFB, Hawaii. District Corps of Engineers, Honolulu, Hawaii.

—**Bowen-McLaughlin-York, Inc.**, York, Pa. $1,049,760. 486 half ton platform trucks. York. Army Tank Automotive Center (AMC), Warren, Mich.

26—**General Motors Corp., Allison div.**, Indianapolis, Ind. $1,480,000. Breech actuator assemblies for the gun/launcher on the General Sheridan, X551 vehicle. Indianapolis. Watervliet Arsenal (AMC), Watervliet, N.Y.

—**Mars Constructors, Inc.**, Honolulu, Hawaii. $1,761,000. Construction of four equipment shops, Schofield Barracks, Hawaii. District Corps of Engineers, Honolulu, Hawaii.

—**H. O. Boehme, Inc.**, Westbury, L.I., N.Y. $1,799,215. Light weight transportable page printer teletypewriting sets with ancillary items. Westbury. Procurement Div., of Electronics Command (AMC), Philadelphia, Pa.

—**Model Engineering and Mfg. Corp., Courter Products Div.**, Boyne City, Mich. $4,323,350. Radio sets and radio receiver-transmitters. Huntington, Ind. Procurement Div. of Electronics Command (AMC), Philadelphia, Pa.

—Otis Elevator Co., Defense and Industrial Div., Brooklyn, N.Y. $1,012,336. Radio sets. Stamford, Conn. Procurement Div. of Army Electronics Command (AMC), Philadelphia, Pa.

—SCM Corp., Kleinschmidt Div., Deerfield, Ill. $1,407,592. Teletypewriter sets and ancillary items. Deerfield. Procurement Div. of Electronics Command (AMC), Philadelphia, Pa.

—Aircraft Radio Corp., Boonton, N.J. $1,924,439. Radio receiver sets and components. Boonton. Procurement Div. of Electronics Command (AMC), Philadelphia, Pa. phia, Pa.

—Hughes Tool Co., Aircraft Div., Culver City, Calif. $2,122,779. Light Observation Helicopters with supporting publications, engineering data, selected parts and special tools. Culver City. Aviation Command (AMC), St. Louis, Mo.

—Southwest Truck Body Co., St. Louis, Mo. $2,026,402. Six-ton, semi-trailer, shop vans for aircraft shop sets. West Plains, Mo. Army Tank Automotive Center (AMC), Warren, Mich.

—Continental Motors Corp., Muskegon, Mich. $13,490,382. Multi-fuel engines. Muskegon. U.S. Army Mobility Command (AMC), Warren, Mich.

—Kaiser Jeep Corp., Toledo, Ohio. $62,378,086. Various types of five-ton trucks with government furnished multi-fuel engines. South Bend, Ind. U.S. Army Mobility Command (AMC), Warren, Mich.

—Albion Malleable Iron Co., Albion, Mich. $2,653,826. 2.75 inch rocket components. Hillsdale, Mich. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—Sovereign Construction Co., Ltd., Fort Lee, N.J. $2,384,200. Construction of an environmental medicine laboratory at the U.S. Army Natick Laboratories, Natick, Mass. New England Engineer District, Waltham, Mass.

—Shellmaker, Inc., San Francisco, Calif. $1,118,400. Dredging work on the Sacramento River Ship Canal Project. Sacramento, Solano, and Contra Costa Counties, Calif. Sacramento District Corps of Engineers, Sacramento, Calif.

—Electrospace Corp., Glen Cove, N.Y. $2,163,284. 739 radio sets (AN/GRC 10) and six dynamotor power supply units (DY-94/GRC 10). Naguabo, Puerto Rico. Procurement Div., Electronics Command (AMC), Philadelphia, Pa.

—Markwell and Hartz, Inc., Memphis, Tenn. $1,746,104. Work at the Cave Run Reservoir on the Licking River, Kentucky Project. Cave Run Reservoir, Farmers, Ky. Louisville District Corps of Engineers.

—Electrospace Corp., Glen Cove, N.Y. $2,162,680. 739 radio sets and six Dynamotor Power Suppliers. Naguabo, Puerto Rico. Procurement Div. of Electronics Command (AMC), Philadelphia, Pa.

—FMC Corp., Ordnance Div., San Jose, Calif. $4,290,124. Armored Personnel Carriers (M113A1) and mortar Carriers (M125A1). South Charleston, W. Va. Army Tank Automotive Center (AMC), Warren, Mich.

—Bowen-McLaughlin-York, Inc., York, Pa. $1,915,660. Self-propelled 175 mm guns; self-propelled eight-inch howitzers; and recovery vehicles. York. Army Tank Automotive Center (AMC), Warren, Mich.

—General Dynamics Corp., Pomona, Calif. $3,086,601. Work on the MAULER weapon system. Pomona. Los Angeles Procurement District (AMC), Pasadena, Calif.

—F. Miller and Sons, Inc., Lake Charles, La. $3,080,441. Work on the Calcasieu River and Pass, Louisiana, Project. Calcasieu Parish, La. Engineer District, New Orleans, La.

—Van Buskirk Construction Co. and Graves Construction Co., Inc., Sioux City, Iowa. $6,833,484. Work on the Rathbun Dam and Reservoir, on the Chariton River, Project. Centerville, Iowa. District Corps of Engineers, Kansas City, Mo.

—Greer Brothers and Young, Inc., London, Ky. $2,215,099. Work on the Grayson Reservoir, Kentucky Project, Grayson. Engineer District, Huntington, W. Va.

—Day and Zimmerman, Inc., Philadelphia, Pa. $7,920,984. Loading, assembling and packing of ordnance items. Lone Star Army Ammunition Plant, Texarkana, Tex. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—Hercules Powder Co., Wilmington, Del. $10,917,962. Loading, assembling and packing of miscellaneous propellants and explosives, and NIKE boosters. Radford Army Ammunition Plant, Radford, Va. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—Harvey Aluminum Sales, Inc., Torrance, Calif. $6,484,220. Classified items. Milan Army Ammunition Plant, Milan, Tenn. Ammunition Procurement and Supply Agency, Joliet, Ill.

—Ford Motor Co., Special Military Vehicle Operations, Dearborn, Mich. $1,065,000. Production and inspection engineering services for the M151, ¼-ton, utility trucks. Dearborn. Mobility Command (AMC), Warren, Mich.

—Caterpillar Tractor Co., Peoria, Ill. $2,065,569. Tractors with bulldozer, scarifier and scraper controls. Peoria, Ill. Mobility Equipment Center, (AMC), St. Louis, Mo.

NAVY

3 —United Aircraft Corp., Pratt and Whitney Aircraft Div., East Hartford, Conn. $66,040,416. TF-33 aircraft engines for the Air Force. East Hartford. Bureau of Naval Weapons.

—Texas Instruments, Inc., Dallas, Tex. $2,859,415. Attitude heading reference systems for Navy aircraft. Dallas. Bureau of Naval Weapons.

—Youngstown Welding Engineering Co., Youngstown, Ohio. $1,019,081. Torpedo tube sets for two nuclear powered attack submarines. Youngstown. U.S. Naval Supply Center, Oakland, Calif.

5 —Norris Thermador Corp., Los Angeles, Calif. $1,475,625. Bomb casings. Vernon, Calif. U.S. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—Lockheed Missiles and Space Co., Sunnyvale, Calif. $1,493,076. POLARIS surface support equipment. Sunnyvale. Special Projects Office.

6 —Control Data Corp., Minneapolis, Minn. $1,796,000. Manufacture of POLARIS target card computer system for use on SSBN 598 (USS GEORGE WASHINGTON) and 608 (USS ETHAN ALLEN) class submarines. Minneapolis. Special Projects Office.

—Sperry Rand Corp., Sperry Gyroscope Co., Great Neck, L.I., N.Y. $1,703,000. Research and development on TALOS guided missile weapons control system. Great Neck. Bureau of Naval Weapons.

—Texas Instruments Inc., Dallas, Tex. $1,459,063. Radar set components. Dallas. U.S. Navy Aviation Supply Office, Philadelphia, Pa.

7 —Raytheon Co., Lexington, Mass. $1,850,002. Hydraulic power units for SPARROW III missiles. Lowell, Mass. Bureau of Naval Weapons.

10 —Westinghouse Electric Corp., Baltimore, Md. $22,358,416. Pulse doppler missile control systems for F-4J aircraft. Baltimore. Bureau of Naval Weapons.

—Lockheed Missiles and Space Co., Sunnyvale, Calif. $1,147,980. Technical services and engineering support for the POLARIS program. Sunnyvale. Special Projects Office.

—Dow Metal Products Co., Div. of Dow Chemical Co., Madison, Ill. $3,958,468. 51,576 airfield matting extrusions. Madison. Naval Air Engineering Center, Philadelphia, Pa.

11—**Otis Elevator Co.**, Brooklyn, N.Y. $1,168,505. Sonobuoys. Brooklyn. Bureau of Naval Weapons.

—**Lockheed Missiles and Space Co.**, Sunnyvale, Calif. $2,020,700. Research and development for POLARIS program. Sunnyvale. Special Projects Office.

—**Colby Crane & Mfg. Co., Div. of Lockheed Shipbuilding & Construction Co.**, Seattle, Wash. $1,219,492. Four 30-ton boat and repair cranes. Seattle. U.S. Puget Sound Naval Shipyard, Bremerton, Wash.

—**General Dynamics Corp., Electric Boat Div.**, Groton, Conn. $39,841,755. Construction of one submarine tender (AS). Quincy, Mass. Bureau of Ships.

12—**Hughes Aircraft Co.**, Fullerton, Calif. $4,552,278. Components to be used on Naval Tactical Data System (NTDS) equipment aboard naval ships. Fullerton. Bureau of Ships.

13—**Johns Hopkins University**, Silver Spring, Md. $4,857,997. Continued research and development on missile programs. Silver Spring. Bureau of Naval Weapons.

—**Textron, Inc., Oregon Technical Products Div.**, Grants Pass, Ore. $1,464,320. Elementary telemetric data transmitting sets to be used in conjunction with missile programs. Grants Pass. U.S. Naval Avionics Facility, Indianapolis, Ind.

14—**Aerojet General Corp.**, Sacramento, Calif. $2,667,225. Rocket motors and igniters for TARTAR missiles. Sacramento. Bureau of Naval Weapons.

—**Nelse Mortensen and Co., Inc.**, Seattle, Wash. $1,516,570. Construction of 100 family housing units at the Naval Shipyard, Bremerton, Wash. Bureau of Yards and Docks, Northwest Div.

—**United Aircraft Corp., Sikorsky Aircraft Div.**, Stratford, Conn. $11,284,800. Production of CH-3C helicopters. Stratford. Bureau of Naval Weapons.

—**Lockheed Shipbuilding and Construction Co.**, Seattle, Wash. $48,395,000. Construction of two Amphibious Transports, Dock (LPD). Seattle. Bureau of Ships.

17—**Teletype Corp.**, Skokie, Ill. $1,083,611. Teletype page printers, including repair parts and technical manuals, for use on naval ships. Skokie. Bureau of Ships.

—**Kollmorgen Corp.**, Northampton, Mass. $3,067,564. Conversion of seven periscopes and furnishing nine others with associated equipment for installation on nuclear powered attack submarines. Northampton. Bureau of Ships.

18—**Planing Research Corp.**, Los Angeles, Calif. $1,158,240. Additional study for development of data processing system for operational intelligence. Los Angeles. Office of Naval Research.

—**Planing Research Corp.**, Los Angeles, Calif. $1,314,264. Additional study for development of data processing system for combatant logistics functions. Los Angeles. Office of Naval Research.

—**Curtiss-Wright Corp.**, Wood-Ridge, N.J. $1,152,307. Design, fabrication and test of a lift fan engine for VTOL (Vertical Takeoff Landing) application. Wood-Ridge. Bureau of Naval Weapons.

—**Columbia University**, New York City. $1,075,000. Additional research and development in nuclear physics. Office of Naval Research.

[illegible] Gear Corp., Lynwood, Calif. $1,020,517. Modi-
its, including spare parts and technical
or the variable depth sonar hoist mechanism
naval ships. Lynwood. Bureau of Ships.

Corp., Sunnyvale, Calif. $2-
RIS MK 13 Model O
ial Projects Office.

lif. $1,436,500. M-21
ith Marine Corps
l Support (SATS).

21—**Magnavox Co.**, Fort Wayne, Ind. $1,187,122. Sonobuoys. Fort Wayne. Bureau of Naval Weapons.

24—**Lockheed Missiles and Space Co.**, Sunnyvale, Calif. $11,922,200. Manufacture of components for POLARIS A-3 missile. Sunnyvale. Special Projects Office.

25—**Curtiss-Wright Corp., Electronics Div.**, East Paterson, N.J. $1,799,489. Radar sets with spare parts, technical manuals and drawings for use by U.S. Army. East Paterson. Bureau of Ships.

26—**Raytheon Co., Equipment Div.**, North Dighton, Mass. $2,165,679. Radar sets for use with gunfire control systems. North Dighton. U.S. Navy Purchasing Office, Washington, D.C.

27—**Northern Ordnance Div., FMC Corp.**, Fridley, Minn. $39,516,000. 5-inch gun mounts. Fridley. U.S. Naval Ordnance Plant, Louisville, Ky.

—**Sperry Gyroscope Co.**, Syosset, L.I., N.Y. $1,225,000. Repair of navigation systems equipment furnished by the company to the Navy. Syosset. Navy Bureau of Ships.

—**Sperry Rand Corp., Univac Div.**, St. Paul, Minn. $1,200,000. Data processing sets. St. Paul. Navy Bureau of Ships.

28—**F. D. Rich Co., Inc.**, Stamford, Conn. $6,422,000. Construction of 400 family housing units at the Naval Station, Key West, Fla. Bureau of Yards and Docks, Southeast Div.

AIR FORCE

3—**Sperry Rand Corp.**, Carle Place, N.Y. $1,099,307. Procurement of LORAN navigation sets for C-130 aircraft. Great Neck. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.

4—**Lear Siegler, Inc.**, Grand Rapids, Mich. $2,785,828. Aircraft navigation and bombing computer sets. Grand Rapids. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

5—**Lockheed Missiles and Space Co.**, Sunnyvale, Calif. $5,538,154. Production of AGENA boosters. Sunnyvale. Space Systems Div. (AFSC), Los Angeles, Calif.

6—**General Precision, Inc.**, San Marcos, Calif. $3,200,000. Navigational systems and associated equipment for C-141 STARLIFTER aircraft. San Marcos. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Raytheon Co.**, Waltham, Mass. $1,443,398. Design, installation and operation of high-speed digital computers for the Air Force. Waltham and Rome, N.Y. Rome Air Development Center (AFSC), Griffiss AFB, N.Y.

7—**General Precision, Inc.**, San Marcos, Calif. $4,352,857. Components of navigational computers sets, spare parts, and aerospace ground equipment. San Marcos. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Cutler-Hammer, Inc., Airborne Instruments Laboratory Div.**, Deer Park, L.I., N.Y, $13,277,370. Spare parts for airborne electronic reconnaissance systems. Deer Park. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—**AiResearch Mfg. Co., Div. of Garrett Corp.**, Phoenix, Ariz. $1,291,303. Gas turbine generators. Phoenix and El Segundo, Calif. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

10—**General Electric Co., Defense Electronics Div.**, Syracuse, N.Y. $1,120,795. Test operations for Pacific Missile Range. Vandenberg AFB, Calif. Space Systems Div. (AFSC), Los Angeles, Calif.

11—**Perkin-Elmer Corp.**, Norwalk, Conn. $8,000,000. Procurement of camera systems for aircraft. Norwalk.

Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—AVCO Corp., Research and Advanced Development Div., Wilmington, Mass. $1,700,000. Design, development, fabrication, test, and evaluation of MINUTEMAN MARK IIA reentry vehicles. Wilmington. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

12—Sperry Gyroscope Co., Div. of Sperry Rand Corp. $3,764,000. Radar altimeter systems for C-130, B-52, and CH-3 aircraft. Great Neck. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Boeing Co., Seattle, Wash. $6,600,000. Aerospace ground equipment, spares, technical publications and data in support of MINUTEMAN II program. Seattle. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

13—Martin Marietta Corp., Denver, Colorado. $1,910,000. Supplies and services to support the TITAN II program. Denver. Air Materiel Area (AFLC), Norton AFB, Calif.

—Litton Industries, Inc., Electron Tube Div., San Carlos, Calif. $1,104,820. Research and development of miniature communication-electronic equipment. San Carlos. Systems Engineering Group (AFSC), Wright-Patterson AFB, Ohio.

—Raytheon Co., Microwave and Power Tube Div., Waltham, Mass. $1,180,869. Research and development of miniature communication-electronic equipment. Waltham. Systems Engineering Group (AFSC), Wright-Patterson AFB, Ohio.

14—National Co., Inc., Melrose, Mass. $2,948,466. Procurement of communications equipment. Melrose. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Bedford, Mass.

—Lockheed Aircraft Corp., Marietta, Ga. $62,196,322. Work on the C-141 jet transport aircraft program. Marietta. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

17—Hycon Mfg. Co., Monrovia, Calif. $2,428,608. Equipment and services or modification of aircraft cameras. Monrovia. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—Holmes and Narver, Inc., Los Angeles, Calif. $1,000,000. Operation and maintenance of the Air Force facility at Eniwetok, Marshall Islands. Air Force Western Test Range Div. (AFSC), Vandenberg AFB, Calif.

—Lockheed Missiles and Space Co., Sunnyvale, Calif. $1,008,322. Production of AGENA boosters. Sunnyvale. Space Systems Div. (AFSC), Los Angeles, Calif.

19—International Telephone and Telegraph Corp., Federal Laboratories, Fort Wayne, Ind. $1,110,314. Electronic data display equipment. Fort Wayne. Electronic Systems Div. (AFSC). L. G. Hanscom Field, Bedford, Mass.

—Olin Mathieson Chemical Corp., East Alton, Ill. $1,892,000. Production of engine starter cartridges for F-105, B-52, and KC-135 aircraft. Marion, Ill.

—Bendix Corp, Radio Div., Baltimore, Md. $2,666,840. Modification and improvement of the AN/FPS 85 space track radar. Towson, Md., and Elgin AFB, Fla. Rome Air Development Center, (AFSC), Griffiss AFB, N.Y.

—Aerodex, Inc., International Airport, Miami, Fla. $1,357,397. Overhaul of R-4360 engines. Miami. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

—Progressive Construction Co., Inc., Farmville, Va. $2,749,087. Construction of family housing at Langley AFB, Va. 4500th Air Base Wing, Langley AFB, Va.

21—Sylvania Electric Products, Inc., Waltham, Mass. $1,109,052. Fabrication of a ground electronics system for MINUTEMAN Wing VI. Buffalo, N.Y. and Waltham. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—Boeing Co., Wichita, Kan. $1,210,136. Modification of B-52 aircraft. Wichita. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

24—AAXICO Airlines, Inc., Miami, Fla. $9,617,020. Air Transportation Services within Continental U.S. Military Air Transport Service.

Airlift International, Inc., Miami, Fla. $5,419,686. International and Domestic Air Transportation Services. Military Air Transport Service.

Alaska Airlines, Inc., Seattle, Wash. $1,797,020. International and Domestic Air Transportation Services. Military Air Transport Service.

Continental Airlines, Inc., Los Angeles, Calif. $7,551,310. International and Domestic Air Transportation Services. Military Air Transport Service.

Flying Tiger Line, Inc., Burbank, Calif. $15,597,599. International Air Transportation Services in Pacific Area. Military Air Transport Service.

Northwest Orient Airlines, Inc., St. Paul Minn. $12,889,290. International Transportation Services. Military Air Transport Service.

Pan American World Airways, Inc., New York, N.Y. $23,619,546. International Air Transportation Services. Military Air Transport Service.

Seaboard World Airlines, Inc., Jamaica, L.I., N.Y. $11,434,690. International and Domestic Air Transportation Services. Military Air Transport Service.

Southern Air Transport, Inc., Washington, D.C. $6,202,782. International Air Transportation Services. Military Air Transport Service.

Trans Caribbean Airways, New York, N.Y. $7,537,836. International Air Transportation Services. Military Air Transport Service

Trans International Airlines, Inc., Las Vegas, Nev. $3,960,577. International Air Transportation Services. Military Air Transport Service.

Trans World Airlines, Inc., New York, N.Y. $6,193,618. International Air Transportation Services. Military Air Transport Service.

World Airways, Inc., Oakland, Calif. $9,707,615. International and Domestic Air Transportation Services. Military Air Transport Service.

Zantop Air Transport, Inc., Inkster, Mich. $9,034,862. Air Transportation Services within the Continental U.S. Military Air Transport Service.

25—American Electric, Inc., Paramount, Calif. $3,016,000. Ordnance items. Paramount and El Cajon, Calif. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

26—Space Technology Laboratories (Thompson Ramo Wooldridge, Inc.), Redondo Beach, Calif. $3,000,000. Work, at Redondo Beach, on space programs. Space Systems Div. (AFSC), Los Angeles, Calif.

27—Boeing Co., Seattle, Wash. $2,344,100. Modification of early MINUTEMAN missiles. Rapid City, S. D. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—Belock Instrument Corp., College Point, L.I., N.Y. $3,264,413. Procurement of radar equipment, spare parts, and associated ground equipment. Lawrence, Mass. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

28—Sperry Rand Corp., Carle Place, N.Y. $1,190,000. Procurement of LORAN navigation sets for C-130 aircraft. Carle Place. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Kaman Aircraft Corp., Bloomfield, N.J. $1,426,000. Production of H-43F helicopters and related equipment. Bloomfield. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Goodyear Aerospace Corp., Litchfield Park, Ariz. $1,572,780. MINUTEMAN missile transporter. Litchfield Park. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—Aerojet General Corp., Liquid Rocket Plant, Sacramento, Calif. $2,837,000. Research and development for the TITAN III transtage. Sacramento. Space Systems Div. (AFSC), Los Angeles, Calif.

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Joint NASA/Navy IQSY Solar Satellite Launch Planned

The National Aeronautics and Space Administration and the Naval Research Laboratory (NRL) will launch a satellite to measure and monitor solar X-ray emissions during the final portion of the 1964-65 International Quiet Sun Year (IQSY).

Launching of the IQSY Solar Explorer, developed by NRL, is expected in the second half of this year from NASA's Wallops Station, Wallops Island, Va.

Scientists throughout the world have been invited to participate in using data from the satellite. Information will be correlated with that of other worldwide scientists conducting studies related to IQSY, a period when solar activity is at a minimum.

The IQSY Solar Explorer, by measuring and monitoring solar X-ray emissions and providing immediate data to interested scientists, has the potential for improving forecasts of ionospheric conditions that affect short-wave radio communications.

The 125-pound spacecraft consists of two 24-inch hemispheres separated by equatorial band in which nine photometers for measuring X-ray emissions are installed. Electrical power is supplied by solar cells mounted on the hemispheres.

The spin-stabilized satellite will be placed into a 400 by 630 statute mile (350 by 550 nautical mile) orbit inclined 60 degrees to the Equator. Expected active lifetime is one year.

The spacecraft will complement and continue the missions of other NASA spacecraft and the NRL's Solar Radiation satellite 1964-01D, launched in January 1964.

The NASA Office of Space Science and Applications (OSSA) has overall direction of the IQSY Solar Explorer and Wallops Station is responsible for project coordination.

Responsibility for command and acquisition of recorded data will be carried out by NRL through its Tracking and Command Station in Hybla Valley, Va.

The NASA Goddard Space Flight Center, Greenbelt, Md., will be responsible for tracking the satellite during its useful life and will support NRL in data acquisition and recording of telemetered data from the satellite.

DSA to Furnish Electronic Supplies to NASA

The Defense Supply Agency will furnish an estimated $1.5 million worth of electronic items annually on a reimbursable basis to the National Aeronautics and Space Administration as a result of an interagency agreement approved by the two agencies.

The agreement, which will involve approximately 12,000 centrally managed items at DSA's Defense Electronics Supply Center (DESC), Dayton, Ohio, was formally approved by John D. Young, Deputy Associate Administrator, NASA, and Major General Francis C. Gideon, USAF, Deputy Director, DSA. Fourteen NASA installations and distribution points will receive support from DESC, beginning July 1.

Among the major NASA projects to receive support from DSA are manned space exploration involving the Gemini and Apollo programs; unmanned investigations of earth, moon, sun and planets employing sounding rockets, orbiting spacecraft, and interplanetary probes; development of meteorological and communications satellite systems; and advanced research and technological development to support United States aeronautical and space programs.

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DEPARTMENT OF DEFENSE

Publication of
ASSISTANT SECRETARY OF DEFENSE-PUBLIC AFFAIRS

The Air Force Customer

"One important program objective of the United States Air Force in support of national policy is to 'exploit technology to maintain a distinct military advantage in aerospace power.' . . . We in the United States have no corner on technological breakthroughs and I don't have to emphasize to you the consequences of a potential enemy breakthrough that is not offset by a corresponding United States advance. To guard against such technological surprises as well as to provide the technology required to support our defense efforts, we must endeavor to maintain an aggressive research and technology program."

The foregoing is quoted from the presentation by Major General M. C. Demler, Commander, Research & Technology Division, Air Force Systems Command, at the recent DOD-NSIA Advanced Planning Briefings for Industry. Highlights from the Air Force addresses made at the briefings begin on page 15.

The Editors.

DEFENSE INDUSTRY

BULLETIN

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The purpose of the *BULLETIN* is to serve as a means of communication between the Department of Defense (DOD) and its authorized agencies and defense contractors and other business interests. It will serve as a guide to industry concerning official policies, programs and projects, and will seek to stimulate thought by members of the defense-industry team in solving the problems that may arise in fulfilling the requirements of the DOD.

Material in the *BULLETIN* is selected to supply pertinent unclassified data of interest to the business community. Suggestions from industry representatives for topics to be covered in future issues should be forwarded to the Business & Labor Division.

The *BULLETIN* is distributed each month to the agencies of Department of Defense, Army, Navy, and Air Force, and to representatives of industry. Request for copies should be addressed to the Business & Labor Division, OASD/PA, Room 2E813, The Pentagon, Washington, D.C. 20301, telephone, OXford 5-2709.

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President Johnson Signs FY 1966 Procurement Authorization Bill

President Johnson has signed S. 800, an act to authorize appropriations during Fiscal Year 1966 for procurement of aircraft, missiles, naval vessels and research, development, test and evaluation (RDT&E) for the Armed Forces, and for other purposes. Following is a breakdown of the total authorization:

Procurement	Amount Authorized
Aircraft	$ 5,810,500,000
Missiles	1,426,800,000
Naval vessels	1,721,000,000
RDT&E	6,444,500,000
Total	$15,402,800,000

Five-Year Modernization Program Planned for WSMR

Modernization is an increasingly critical work at White Sands (N.M.) Missile Range (WSMR), the nation's largest all-land missile range, where approximately $10 million is allocated this year for new equipment, plus $5 million for research and development of instrumentation.

Advances in missile technology presenting a requirement for highly sophisticated tracking, reporting and control instrumentation have imposed upon White Sands the need for an estimated $50 to $75 million for modernization over a period of five years.

In seeking to meet the requirements of modern missile technology, officials at WSMR are taking a double-forked approach—contracting with industry to meet many of the requirements, but relying heavily on expanded in-house laboratory facilities. The in-house laboratories of WSMR simulate various electronic and radiation environments for testing purposes including structural experiments, quality control, vibration and other conditions.

An important part of the modernization effort is a new concept known as ARTRAC (Advanced Range Testing, Reporting Control). It calls for extremely accurate data very soon after testing is completed or concurrently with control of the missile.

"Real time data" is the term applied to the requirement for data essential to instantaneous action, i.e., to determine where a missile might impact if destroyed at a precise instant, or to send instructions to correct its course. ARTRAC involves split-second reporting of data and centralized control of operations.

Requirements for the five-year instrumentation modernization program now under way were studied by a special subpanel of the Army Scientific Advisory Panel during a visit to WSMR in September 1963.

When the proposed modernization program is completed, which is dependent upon continued funding at approximately the current level over a five-year period, WSMR is expected to be capable of measuring space position and velocity of test vehicles with an accuracy of plus or minus one foot and plus or minus of one per cent of velocity over the entire 4,000-square mile range.

Project Management in the U.S. Navy

by

Captain W. C. Moore, USN

On 2 December 1963, a 121-year old pattern of organization within the U. S. Navy came to an end. On that day, the three-star flag of Vice Admiral W. A. Schoech symbolically announced that a single Naval officer was, for the first time, responsible for the material support of the operating forces.

With the activation of the Naval Material Support Establishment (NMSE) under the Chief of Naval Material (CNM), the Navy initiated a series of important developments within the part of its organization responsible for the logistics support of the fleet and the Marine Corps. To understand these changes, and their implications, it is necessary to know something of the traditional organization which the NMSE supplanted.

Since 1842, the operating forces had relied on a number of separate bureaus to deliver the ships, weapons, equipment and personnel which, when properly assembled, embodied the fighting power of the Navy. Over the years, a large number of modifications and adjustments had been made in the organization of these bureaus.

In recent years these adjustments had been dictated mainly by the rising complexity of weaponry and the resulting necessity for advanced competence in technical and business management. These forces had brought about changes such as the amalgamation in 1959 of the Bureaus of Ordnance and Aeronautics into the Bureau of Naval Weapons, as well as many other organizational modifications, large and small.

By December of 1963 there were six bureaus; four "material bureaus" and two "people bureaus".

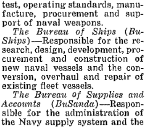
The Material Bureaus, and their basic responsibilities, were (and are):

The Bureau of Naval Weapons (*BuWeps*)—Responsible for the research, design, development, test, operating standards, manufacture, procurement and support of naval weapons.

The Bureau of Ships (*BuShips*)—Responsible for the research, design, development, procurement and construction of new naval vessels and the conversion, overhaul and repair of existing fleet vessels.

The Bureau of Supplies and Accounts (*BuSanda*)—Responsible for the administration of the Navy supply system and the supply support for projects, bureaus and offices, and Fleet commands.

The Bureau of Yards and Docks (*BuDocks*)—Responsible for the design, planning, development, construction, alteration and maintenance of facilities at shore facilities of the Naval Establishment.



Capt. Waller C. Moore, USN, is the Director of the Plans Division in the Office of the Chief of Naval Material. In this position he is a key figure in Navy's drive to exploit the project management technique in building new and vital warfare systems. His prior assignments included service as Director, Underwater Warfare Section, Bureau of Naval Weapons, and Commanding Officer of USS Currituck (AV-7) and USS Yorktown (CVS-10). Capt. Moore is a graduate of the U. S. Naval Academy.

The two remaining Bureaus, the "people bureaus" are the Bureau of Medicine and the Bureau of Personnel.

The practice of dividing support responsibilities between various bureaus worked reasonably well through the years, but after World War II it became increasingly apparent that few modern weapons and support systems fit into bureau-sized packages, and that coordination or cooperation by autonomous bureaus was not the answer to the Navy's most pressing material problems.

These problems had been critically examined by a special board, convened in 1962. This board subjected the inner workings of the Navy to a year of intensive study, and expressed its findings in a multi-volume report, titled: "Review of Management of the Department of the Navy."

Among the primary recommendations of the board was one which called for the existing Office of Naval Material (an office responsible for procurement policy) and the four material bureaus to be combined into an "NMSE". This organization was to be under the command of a single chief.

The fundamental reason for this change was to assign responsibility for support to one individual. But there were other important reasons as well. One of these was the fact that this new arrangement would provide a framework within which the Navy could employ *project management* on whatever scale efficiency and effectiveness required.

Of all the reasons for the establishment of a combined, integrated NMSE, under a single chief, the need for strengthened project management was one of the most compelling.

In the Navy concept of project management, the organizational pattern resembles a matrix. As shown on Chart 1, the bureaus can be thought of as the vertical elements of the matrix, and the project managers as the horizontal elements.

Together the bureaus and the project managers share the parcels of resources and know-how which are the substance from which the Navy creates and deploys new weapons systems. This chart shows that, where necessary, projects can cross bureau boundaries and, after proper coordination, utilize resources which are otherwise under bureau control.

Chart 2 shows the organization of the Naval Material Support Establishment. It indicates the relationship of the Chiefs of the Material Bureaus, and of the managers of major projects, to the Chief of Naval Material.

At present, the Navy has three categories of designated projects. These are:

(1) Projects designated by the Secretary of the Navy.

(2) Projects designated by the Chief of Naval Material.

(3) Projects designated by Bureau Chiefs.

The decision as to which authority—SecNav, CNM, or a Bureau Chief—designates a project depends on the importance of the project when judged against the following criteria:

(1) The project has a high national priority or an urgent military necessity.

(2) The project has top-level interest.

(3) The project comes with a sizeable price tag. The normal threshold for designation is $25 million of R&D costs, or an anticipated production cost of $100 million.

(4) The project is highly complex, either technically or organizationally. Most projects are challenging as engineering achievements. All major projects cross the organizational lines of the material bureaus and many involve close and long term cooperation with the operating forces of the Navy and Marine Corps or of other services.

(5) Other agencies of the Government, or other services, depend upon the Navy for successful development of the system.

(6) Such great advances in technology are necessary to assure success that unusually intensive management is appropriate.

(7) The project has high risk of major slippage or over-run if its management is not entrusted to a special organization.

Each designated project in the Navy operates under a charter. The charter is promulgated by the official who establishes the project. The charter specifically sets forth the name of the project manager, the items for which the project manager will be responsible, interface relationships (including those with the organizations which will provide logistical, operational testing and personnel training), communication channels to be followed and the location of the central project office. The project manager will have direct control of the allocation of all resources assigned to his project in the Five Year Force Structure and Financial Plan.

Ideally, the project manager or his key assistants will be associated with the project from its earliest stages. It is desirable for them to participate in the preparation of the Proposed Technical Approaches (PTAs) which outline possible characteristics of the yet-to-be-developed weapon system. Ordinarily, however, it appears that most project teams will be formed shortly before the project enters its Definition Phase.

The project manager for a designated project is selected on the basis of his ability as a technical and business manager. Most major projects are headed by flag officers.

At present, the Navy has a total of 22 designated projects. These are:

SECNAV Designated:

- Fleet Ballistic Missile Project.
- Surface Missile Systems Project.
- Project Scrap—Selective Curtailment of Reports and Paperwork. (This is an administrative, not a hardware, project. The project manager is the Inspector General of the Navy, and he reports to the Secretary of the Navy.)
- Anti-Submarine Warfare Systems Project (ASWS).

CNM Designated:

- F-111B Weapon System Project. This includes the Phoenix Missile System.
- Instrumentation Ships Project (ISPO).
- All-Weather Carrier Landing Systems Project (ACLS).
- Reconnaissance, Electronic Warfare, Special Operations and Naval Intelligence Processing Systems (REWSON).
- Air Traffic Control Radar Beacon System and IFF Mark XII System (AIMS).
- OMEGA Navigation System (OMEGA).

AIMS and the ISPO are projectized partly because they have important intra-agency aspects. The Instrumentation Ships Project reflects Navy cooperation with the Air Force and NASA missile range and space instrumentation programs, and AIMS functions in coordination with the FAA, the Air Force and the Army.

Only two Bureau Chiefs, the Chiefs of the Bureau of Ships and the Bureau of Naval Weapons have so far chartered projects.

Bureau of Naval Weapons designated projects:

- E-2A Early Warning Aircraft.
- F-4 Phantom II fighter.
- A-6 Intruder attack aircraft.
- A-5 Vigilante attack aircraft.
- A-7 Corsair II attack aircraft.
- OV-10 (COIN) Counterinsurgency aircraft.
- DASH drone anti-submarine helicopter.
- Mark 44 Torpedo lightweight anti-submarine torpedo.
- Mark 46 Torpedo lightweight anti-submarine torpedo.
- Mark 48 Torpedo anti-submarine torpedo.

The Bureau of Ships designated projects are:

- Acoustic and Torpedo Countermeasure Systems Project (SUBAJAD).
- Satellite Communications Project (SATCOM).

An additional 40 to 60 weapon or support systems are under consideration for eventual designation, and perhaps six or eight of these may be chartered during the next few months.

During the year and a half since the Chief of Naval Material assumed command of the NMSE, the Office of the Chief of Naval Material (NAVMAT) has made excellent progress, despite limited staffing, toward the goal of exercising responsible—and responsive—control of the NMSE.

Under the command of Vice Admiral William A. Schoech the management philosophy of the OCNM was "Control,

(Continued on Page 11)

CHART I

THE BUREAU/PROJECT MATRIX

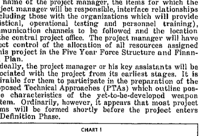
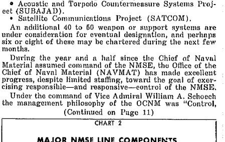


CHART 2

MAJOR NMSE LINE COMPONENTS



"Mission SAFETY-70"

War on Federal Work Injuries Kicked Off by President Johnson

> "The reduction of waste in manpower and materials is one of the principal managerial aims of the Administration.
>
> "As a first step in reducing these needless tragedies and this waste, I am launching Mission SAFETY-70.
>
> "Under this mission I am directing the Federal Departments and Agencies to reduce their injury frequency 30 per cent by 1970."
>
> Lyndon B. Johnson

Mission SAFETY-70, code name for a program that calls for reducing job injuries among Federal civilian employees 30 per cent by 1970, is part of a growing public concern over rising accident tolls. Industry safety plans are being studied by Government officials as part of the program.

President Johnson initiated the mission February 16, 1965. He described it as "a new, practical safety effort designed to reduce Federal work injuries and costs, year by year. . . ." In a Safety Policy for the Federal Service issued on the same day he requested the heads of all departments and agencies to review carefully and critically their safety policies and programs and revise them where necessary.

"Constant vigilance, effective action and sustained effort for improved performance are required," he said. The Federal Government will cooperate with state and local governments, industry and labor and safety organizations in developing and applying safety standards responsive to changing conditions and the pace of technological progress, the statement added.

In an effort to drive home the immensity of the accident problem, Government officials pointed out that in 1964 accidents of all kinds killed 104,000 persons in the United States and injured 50 million others. The cost to the nation was in excess of $15 billion. Accidents last year squandered about as much national income as a 3 per cent growth rate in economy produced. This is enough, Government sources say, to meet the entire cost of the War on Poverty and the programs under the Manpower Development and Training Act.

"Efforts planned to meet the objectives of Mission SAFETY-70," Secretary of Defense McNamara said, "include institution of improved accident reporting and follow-up procedures, extensive training of personnel in accident prevention techniques, safety engineering to prevent or correct hardware and maintenance deficiencies and continuing evaluation of compliance with safety requirements."

All elements of the Defense Department have responded to the SAFETY-70 memorandum. The Department of the Navy will use the program as the theme for its regularly scheduled East Coast and West Coast Regional Safety Conferences. Army has re-arranged its reporting format to relieve line personnel from accident analysis, assigning this function to full-time safety specialists. Among other steps taken by Air Force are plans for a ground safety program for the Air National Guard. To date there has been no formal ground safety program in that organization.

Other Defense agencies have acted to bring their present safety programs up to date. A common step is integrating headquarters programs with those of field activities.

Greater emphasis will be given to traffic safety. With more than a quarter-million Federal vehicles on the streets and highways in connection with official business, the Government contributes its share to the traffic problem and is determined to help solve that problem. Traffic experts say that improved driving performance by Government drivers could serve as a good example for other motorists.

SecDef Statement on Mission SAFETY-70

Successful execution of vital Defense Department missions rests with our more than 3.5 million employees, two-thirds of them in uniform. When any one of them is less than fully effective, our mission suffers a proportionate loss.

That, alone, is reason enough for vigorous support of the President's Mission SAFETY-70, a program to reduce the number of injuries among federal employees 30 per cent by 1970.

I have directed that such support be given throughout every command and agency. But success rests with the individual, in his own work and in his relationship with those around him. Only constant awareness of safety measures and vigilance in observing them can make a job safe.

I call on every Department employee to keep alert to his own safety—on the job, on the streets and highways and in his home—and to be alert always to the safety of others.

Robert S. McNamara

Guidelines for Developing and Submitting Unsolicited Proposals

U. S. Air Force

In order to utilize to the fullest extent the vast supply of intellectual resources this country possesses, the Air Force Systems Command (AFSC) encourages any organization or individual outside the Air Force to suggest a research and development effort.

Voluntary proposals to perform research and development are distinguished from proposals which are requested by Air Force procurement activities from qualified sources. Voluntary proposals, if adopted, must be specially funded. Therefore, it is mandatory that the voluntary proposal be evaluated as offering significant advancement in the present state of the art before consideration for support by the U. S. Air Force can be given.

Advance Consultations.

It is the desire of the AFSC to give advance opinion on all proposed research and development efforts voluntarily suggested by organizations and individuals outside the Air Force. This opinion will provide the submitter guidance prior to the start of any extensive effort in the development of a detailed unsolicited proposal and is based on the assumption that there is a valid Air Force need for the suggested work. Prior personal contact with Air Force technical personnel, while not required, is permissible and encouraged.

Proprietary Rights and Information.

Unsolicited proposals do not necessarily contain proprietary information. They may be unique unto themselves, or may be no more than a restatement of existing Air Force requirements and as such should not be considered proprietary. Unsolicited proposals which truly contain proprietary data should have every paragraph which reveals proprietary data clearly marked "Proprietary Information Company-Confidential" at the beginning and end of each such paragraph.

When and How to Submit.

Research and development proposals may be submitted at any time. If an industrial organization feels it has an idea that is original in nature and concept and falls within the Air Force areas of interest, a preliminary proposal may be submitted without waiting to be asked.

While no rigid format is specified, elaborate brochures or presentations are definitely not desired. The best way to inform the AFSC agencies of proposed efforts, and to determine if they have a potential usefulness to the Air Force, is by letter. The ABC's of successful proposals are accuracy, brevity and clarity. It is extremely important that the letter be prepared with great care to encourage its reading, to facilitate its understanding and to impart an appreciation of the ideas desired to be conveyed. Specifically, the letter should include the following:

1. Name and address of the organization.
2. Type of organization (profit, non-profit).
3. Concise title and abstract of the proposed research.
4. An outline and discussion of the purpose of the research, the method of attack upon the problem and the nature of the expected results.
5. Name and research experience of principal investigator.
6. A suggestion as to the proposed starting and completion dates.
7. An outline of the proposed budget, including information on equipment, facility and personnel requirements.
8. Names of any other Federal agencies receiving the proposal. (This is extremely important.)
9. Brief description of the facilities, particularly those which would be used in the proposed research effort.
10. Brief outline of previous work and experience in the field.
11. If available, a descriptive brochure and financial statement.

AFSC Form 91 — Policy Agreement.

AFSC Form 91, entitled "Policy Agreement for Evaluation by the AFSC of Unsolicited Articles, Disclosures, Inventions and Voluntary Proposals for Contract," is a statement of the terms under which the AFSC will accept voluntary unsolicited proposals. This agreement must be signed by an officer of the company, or the individual owning the intellectual property contained in the voluntary proposal prior to evaluation. It is designed for the mutual protection of all concerned and provides protection based on proprietary claims made by submitters of voluntary proposals. No request for special exception or changes in the policy agreement will be granted. This agreement is to be executed only once (in duplicate) at the time of initial proposal submission. All subsequent proposal submissions will be covered by the executed policy agreement.

Evaluation.

AFSC agencies are responsible for acknowledging receipt of unsolicited proposals. Unsolicited proposals will be thoroughly and completely evaluated by appropriate personnel engaged in the technical areas of effort similar to the unsolicited proposal under consideration. Results of the evaluation will be furnished to the submitter.

Arranging a Contract.

The Air Force funds only those unsolicited proposals evaluated as offering significant advancement in the state of the art. If the unsolicited proposal is accepted, a contract may be negotiated between the organization and the appropriate AFSC activities. Contract details will be discussed and worked out between the submitter and the procurement activity of the AFSC activity concerned. In the event the proposal is not accepted, the Government is not obligated in any way to reimburse the submitter for any costs which may have been incurred in submitting the unsolicited proposal.

(See list of AFSC Unsolicited Proposal Focal Points on page 5.)

Air Force Systems Command

Unsolicited Proposal Focal Points

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Air Force Flight Dynamics Laboratory Wright-Patterson AFB, Ohio Base Number: (Area Code 513) 253-7111	Mrs. Odebrecht Mail Office Symbol: FDE Ext. 23120
Air Force Avionics Laboratory Wright-Patterson AFB, Ohio Base Number: (Area Code 513) 253-7111	Mrs. E. Fox Mail Office Symbol: AVS Ext. 30126 or 39910
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Air Force Weapons Laboratory Kirtland AFB, N. M. 87117 Base Number: (Area Code 505) 247-1711	Lt. P. Carpenter Mail Office Symbol: WLPC Ext. 3382
Air Force Rocket Propulsion Laboratory Edwards AFB, Calif. 93523 Base Number: (Area Code 805) 258-2111	Mr. D. E. Kistler Mail Office Symbol: RPPR Ext. 85371
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Aeronautical Systems Division Wright-Patterson AFB, Ohio Base Number: (Area Code 513) 253-7111	
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Deputy for Limited War	Lt. A. J. Kloven, Jr. Mail Office Symbol: ASJ Ext. 34103
Deputy for Reconnaissance	Mr. M. R. Mace Mail Office Symbol: ASRO Ext. 29247
Test Integration and Analysis Office	Mr. A. R. Hall Mail Office Symbol: ASTP Ext. 73232
Deputy for Subsystems and Equipment Engineering	Mr. I. S. Mayer Mail Office Symbol: ASWO Ext. 21120
Deputy for Systems Management	Mr. N. F. Schrein Mail Office Symbol: ASZXN Ext. 27246
Aerospace Medical Division Brooks AFB, Tex. 78235 Base Number: (Area Code 512) 532-8811	
6571st Aeromedical Research Laboratory Holloman AFB, N. M. 88330 Base Number: (Area Code 505) 473-6511	Dr. H. J. Von Beckh Mail Office Symbol: ARG Ext. 2453
6570th Personnel Research Laboratory Lackland AFB, Tex. 78236 Base Number: (Area Code 512) 674-1211	Dr. J. W. Bowles Mail Office Symbol: PRO Ext. 3375
USAF School of Aviation Medicine Brooks AFB, Tex. 78235 Base Number: (Area Code 512) 532-8811	Miss C. L. Reynolds Mail Office Symbol: SMOP Ext. 6258
USAF Epidemiological Laboratory Lackland AFB, Tex. 78236 Base Number: (Area Code 512) 674-1211	Lt. R. G. Welker Mail Office Symbol: EPA Ext. 3016
6570th Aerospace Medical Research Laboratory Wright-Patterson AFB, Ohio Base Number: (Area Code 513) 253-7111	Mr. E. E. Martin Mail Office Symbol: MRO Ext. 22214
Arctic Aeromedical Laboratory Fort Wainwright, Alaska Base Number: Fairbanks, Alaska 352-2100	Dr. H. F. Drury Mail Office Symbol: ALR
Wilford Hall USAF Hospital Lackland AFB, Tex. 78236 Base Number (Area Code 512) 674-3211	Maj. R. C. Wolff Mail Office Symbol: LMR Ext. 3228
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Space Systems Division Air Force Unit Post Office Los Angeles, Calif. 90045 Base Number: (Area Code 213) 670-1444	Maj. O. E. Reinhardt Lt. S. G. Johnson Mail Office Symbol: SSTP Ext. 1766
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Air Force Eastern Test Range Patrick AFB, Fla. 32925 Base Number: (Area Code 305) 494 (plus extension)	Mr. E. C. Allmon Mail Office Symbol: ETES Ext. 6907 or 5588
	Mr. George Gogel Mail Office Symbol: ETMKB Ext. 6151 or 7545
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Intelligence--Culture--Skill
Our Main Reliance

by

RAdm. Russell Kefauver, USN

RAdm. Russell Kefauver, USN
Assistant Chief of Naval
Operations (Reserve)

Congressman (later President) James A. Garfield, in an 1878 address before the House of Representatives, stated the basic precept under which the nation's military forces were to be maintained in time of peace — a precept which has held true in principle down to the present day. "Though we will use the taxing power to maintain a small Army and Navy sufficient to keep alive the knowledge of war," he said, "yet the main reliance for our defense shall be the intelligence, culture and skill of our people."

International problems and military needs may change, but the philosophy remains the same: in time of national emergency, the nation must always rely upon (1) the ability of the business and industrial community to provide increased materiel support for our armed forces and (2) upon the trained and available manpower of the military Reserves which, since the beginnings of the republic, have provided the bulk of military forces in time of war.

Strong reserve forces, backing up the active forces, also provide a deterrent force-in-being. Trained and equipped, they can quickly be moved into action to call a bluff — as in the Berlin and Cuban Missile Crises in 1961 and 1962— or to fight a war, as in Korea. Today, for example, 120,000 Naval Reservists already carry their mobilization orders — orders to specific planned billets. These Reservists are available for activation on 24-hour notice.

This emergency manpower resource is the primary value of the nation's military Reserve forces. We can train and maintain about seven Reservists for the price of one man on active duty. But there are other benefits from the Reserve programs: members of Reserve forces are a firm group of patriotic citizens, interested in and informed about their Government, aware of their rights and responsibilities. Twice a citizen, they contribute to the national economy while working at their civilian occupations and, at the same time, they are trained and ready to protect those things which they produce.

Trained and ready. As an example of just how ready, we might cite the recent performance of the Naval Reserve Training Destroyer Escort BRANNON, based in Seattle, Wash. On January 31st of this year, BRANNON was called upon for emergency mission: the ship was under way within eight and a half hours. Some of the obstacles that were overcome included contacting the Reserve crew on a Sunday afternoon, buttoning up and testing a boiler which had been open for annual inspection and topping off fuel and provisions when support activities were observing holiday routine.

The training required to achieve such a smooth and coordinated operation does not come automatically with the taking of an oath. The knowledge required to operate and maintain our increasingly sophisticated military equipment is not gained through a cursory reading of instruction manuals. Military skills once obtained do not remain permanently imbued but must constantly be exercised. Training must be pursued, regularly and diligently.

An important part of this training — a part too frequently overlooked — is the cooperation that must be given by business and industry. Just as the nation as a whole depends upon the Reserve components of the armed forces for the additional strength necessary as a deterrent to war, or to fight and win an actual war, so do the Reserves depend upon the active peacetime support of business and industry to maintain that strength and readiness.

The primary ingredient of that support: a firm and meaningful employment policy that does not discriminate against, but encourages active participation in, Reserve training programs of all the armed services. It is not enough that the company president and senior officials have such a policy — it must extend down to the individual shop and office level in order to be effective. In too many companies, this is not the case. The Reserve components are necessary for our national survival; the bulk of the members of these Reserves must come from the business and industrial community. Membership in the Reserves is a source of justifiable pride for the employee who willingly gives his time and energies improving his ability to serve his country; and a source of pride for the employer who understands that, by encouraging membership in the Reserves, he, too, is contributing to national security. The employer also receives direct benefits in the form of the improved skills and broad experience gained by his employees during their Reserve training periods; skills and experience which are further enhanced by the intangible but vital practice of leadership exercised by Reservists at all levels of responsibility.

Intelligence, culture, skill. Our main reliance. Intelligence and culture may be passed on from one generation to another; but skill must always be learned. Business and industry is encouraged to insure that adequate time is made available for employees—at all levels—to participate in a Reserve program, and to take advantage of the training oportunities available. This is your insurance for the future—and for the future of our nation.

Naval Reserve Celebrates 50th Anniversary

The nation is currently observing the 50th Anniversary of the founding of the Naval Reserve, our first federally organized and controlled Reserve component. The motto for the 50th Anniversary observances is "Citizenship and Seamanship."

The Naval Reserve was established on March 3, 1915, to supplement the willing but uncoordinated State Naval Military; and, as a measure of its immediate worth, within two years of that date the fledgling Naval Reserve was called upon to provide almost 335,000 men — roughly two-thirds of all the men in the Navy — for service in World War I. The contribution in World War II was even more impressive: 87 per cent of the 3,400,000 Navy men in that war were Naval Reservists. Today, more than half a million American citizens are associated with the Naval Reserve.

ABOUT PEOPLE

DEPARTMENT OF DEFENSE

Charles W. Hinkle has been reassigned from Dir. for Security Review, Office of Asst. Secretary of Defense (Public Affairs), to serve as Executive Asst. to the Asst. Secretary of Defense (Public Affairs). Willis D. Lawrence has been named Acting Dir. for Security Review replacing Mr. Hinkle.

Capt. John B. McLendon, SC, USN, has become Dir. for Contract Administration, Office of Asst. Secretary of Defense (Installations & Logistics), replacing Col. Donald B. Sowle, USAF, who retired on June 15.

RAdm. John W. Bottoms, SC, USN, formerly Force Supply Officer on the Staff of Commander Service Force, Pacific Fleet, and Fleet Supply Officer on the Staff of the Commander-in-Chief, Pacific Fleet, became Executive Dir., Procurement & Production, DSA, on June 1. Brig. Gen. William L. Hamrick, USAF, formerly Dep. Commander, San Bernardino Air Materiel Area, assumed the position of Executive Dir., Technical & Logistics Services, DSA, effective July 15.

Col. William W. Snavely, USAF, previously Dep. Dir. of Production & Programming, Hq., USAF, has replaced Brig. Gen. Robert H. McCutcheon, USAF, as Dir. of Procurement Policy, Office of Asst. Secretary of Defense (Installations & Logistics).

Col. Ronald D. Bagley, USAF, Dir. of Freight Traffic, Military Traffic Management & Terminal Service (MTMTS), is being assigned to the post of Dep. Commander, Eastern Area Command, MTMTS.

Col. Felix J. Gernce, USA, has been assigned as Executive to the Asst. Secretary of Defense (Installations & Logistics). Prior to this assignment he was Commandant of the U. .S. Army Logistics Center.

ARMY

Stephen Ailes resigned from the position of Secretary of the Army on July 1. Stanley R. Resor, who has been Under Secretary of the Army, has succeeded Mr. Ailes as Secretary of the Army.

David E. McGiffert, Asst. Secretary of Defense (Legislative Affairs), has been designated to replace Mr. Resor as Under Secretary of the Army.

W. Brewster Kopp became Asst. Secretary of the Army (Financial Management) on June 14. He replaced Edmund T. Pratt, Jr., who has left Government service.

Col. Joseph P. Alexander, Jr., formerly Commanding Officer, Atlanta General Depot, is now Commandant of the U. S. Army Logistics Management Center. He succeeds Col. Felix J. Gerace.

Col. James H. Batte is the new Commanding Officer of the U. S. Army Edgewood Arsenal, Edgewood, Md., a military complex that embraces Ft. Detrick, Md., Rocky Mountain Arsenal, Colo., and Pine Bluff Arsenal, Ark.

Col. Frank Milner, formerly Chief of the Technical Liaison Office, Office of Chief of Engineers, has assumed command of the U. S. Army Engineer Research & Development Laboratories, Ft. Belvoir, Va.

NAVY

Keneeth E. BeLiee resigned from the position of Under Secretary of the Navy effective July 1.

Robert H. B. Baldwie, a partner in the investment firm of Morgan Stanley and consultant to the Secretary of the Navy, has been nominated to succeed Mr. BeLieu as Under Secretary of the Navy.

Lt. General Richard C. Mangrum became Asst. Commandant of the U.S. Marine Corps on July 1. Gen. Mangrum replaces Lt. Gen. Charles H. Hayes who is retiring from military service.

Capt. A. M. Bogarth relieved Capt. G. B. Lyon as Dir., Technical Training and Personnel Division, Bureau of Naval Weapons, effective June 21.

The following are new assignments in the Office of Naval Material: RAdm. Jack J. Appleby, Dep. Chief of Naval Material (Material & Facilities); RAdm. F. L. Pinney, Chief of Naval Development and Dep. Chief of Naval Material (Development); Capt. N. J. Cummings, Head, Procurement Assistance Branch; Capt. E. O. Proctor, Executive to Asst. Chief of Naval Material (Logistics Support); Capt. S. P. Gartz, Executive to Chief of Naval Development; and Capt. F. C. Watson, Asst. to the Project Manager, Antisubmarine Warfare Systems.

AIR FORCE

The following major commanders are retiring effective July 31: Gen. Walter C. Sweeney, Jr., Commander, Tactical Air Command; Gen. Mark E. Bradley, Commander, Air Force Logistics Command; and Lt. Gen. Ralph P. Swofford, Jr., Commander, Air University.

The President has nominated to the Senate the following officers for appointments and assignments as indicated:

To be promoted to general and reassigned: Lt. Gen. **Kenneth B. Hobson** from Vice Commander, Air Force Logistics Command, to Commander, Air Force Logistics Command; Lt. Gen. **Bruce K. Holloway** from Dep. Commander in Chief, U. S. Strike Command, to Commander in Chief, U. S. Air Forces in Europe.

To be promoted to lieutenant general and reassigned: **Maj. Gen. Albert P. Clnrk** from Commander, 313th Air Div., Pacific Air Forces, to Vice Commander, Tactical Air Command; **Maj. Gen. Lewis L. Mundell** from Dir. of Operations, Air Force Logistics Command, to Vice Commander, Air Force Logistics Command; **Maj. Gen. John W. Carpenter III** from Asst. Dep. Chief of Staff, Plans & Operations for Joint Chiefs of Staff Matters, Hq., USAF, to Commander, Air University; and **Maj. Gen. Joseph H. Moore** from Commander, 2nd Air Div., Pacific Air Forces, to Dep. Commander, Military Assistance Command, Vietnam for Air Operations, and Commander, 2nd Air Div., Pacific Air Forces.

The following reassignments have been announced with effective dates to be announced at a later date: **Lt. Gen. Charles B. Westover** from Vice Commander, Tactical Air Command, to Vice Commander, Air Defense Command; **Lt. Gen. Cecil H. Childre** from U. S. Representative, Central Treaty Organization, to Commander, Continental Air Command; and **Lt. Gen. Henry Viccellio** from Vice Commander, Air Defense Command, to Dep. Commander in Chief, U. S. Strike Command.

Brig. Gen. Maurice F. Casey, Dep. Dir. of Information, is being reassigned to Commander, 1501 Air Transport Wing, Travis AFB, Calif., effective August 16. His replacement will be **Brig. Gen. William C. Garland**, now Commander, 12 Strategic Aerospace Div., Davis-Monthan AFB, Ariz.

Brig. Gen. Joseph R. DeLuca, Dep. Commander, Ogden Air Materiel Area, will become Dep. Dir. of Supply, Air Force Logistics Command, on July 31. His replacement will be **Brig. Gen. Howard W. Moore**, Commander, 19 Air Div., Carswell AFB, Tex.

Maj. Gen. Frank E. Rouse, formerly Dir. of Logistics (J-4), U. S. European Command, has become Commander, San Antonio Air Materiel Area, Kelly AFB, Tex.

Maj. Gen. Otto J. Glasser, previously Vice Commander, Electronic Systems Div., AFSC, has been assigned as Dir. of Operational Requirements, Hq., USAF. His replacement as Vice Commander, Electronics Systems Div., is **Col. Daniel E. Riley**.

Brig. Gen. Horace D. Aynesworth, Commander, Tactical Air Reconnaissance Center, will become Dep. Dir. of Operations, Hq., USAF, on Aug. 16.

Effective Aug. 2, **Brig. Gen. Kyle L. Riddle** will assume command of the Tactical Air Reconnaissance Center, Shaw AFB, S. C.; **Maj. Gen. Walter B. Putnam** will assume command of the Tactical Air Warfare Center, Eglin AFB, Fla.

MEETINGS AND SYMPOSIA

AUGUST 1965

Sixth Biennial Gas Dynamics Symposium, Aug. 25-27, at Northwestern University, Evanston, Ill. Sponsors: Air Force Office of Scientific Research, Office of Naval Research, National Aeronautics and Space Administration, U. S. Army Office of Ordnance Research, Advanced Research Projects Agency and Northwestern University. Contact: Dr. D. G. Samaras (SREP), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D. C. 20333, telephone Oxford 6-3769 or Donald R. Mathis, Box CM, Duke Station, Durham, N. C., telephone (Area Code 919) 286-2285.

Conference on Exploration of Mars and Venus, dates undetermined, at Virginia Polytechnic Institute, Blacksburg, Va. Co-sponsors: National Aeronautics and Space Administration and Air Force Cambridge Research Laboratories. Contact: Dr. John W. Salisbury (CRFL), Air Force Cambridge Research Laboratories, L. G. Hanscom Field, Mass. 01731, telephone (Area Code 617), CR 4-6100, ext. 4624.

SEPTEMBER 1965

Twenty-third International Congress of Physiological Sciences, Sept. 1-9, at Tokyo, Japan. Sponsors: Air Force Office of Scientific Research, National Science Foundation, National Aeronautics and Space Administration, Atomic Energy Commission, National Institutes of Health, National Academy of Sciences-National Research Council and Federation of American Societies for Experimental Biology. Contact: Dr. H. E. Savely (SRL); Air Force Office of Scientific Research, Tempo D., 4th St. and Independence Ave., S.W., Washington, D. C. 20333, telephone OXford 6-4369.

American Physical Society Symposium (Fluid Dynamics Division), Sept. 2-4, at Honolulu, Hawaii. Co-sponsors: Air Force Office of Scientific Research and American Physical Society (APS). Contact: Capt. L. P. Gregg, (SREM), Air Force Office of Scientific Research, Tempo D, 4th St. & Independence Ave., S. W., Washington, D. C. 20333, telephone OXford 6-4369.

Conference on Comparative Neurophysiology, Sept. 10-12, at Tokyo, Japan. Co-sponsors: Air Force Office of Scientific Research and Tokyo Medical and Dental University. Contact: Dr. H. E. Savely, (SRL), Air Force Office of Scientific Research, Tempo D, 4th St. & Independence Ave., S.W., Washington, D. C. 20333, telephone OXford 6-4369.

Symposium on Structural Adhesives Bonding, Sept. 14-16, at Stevens Institute of Technology, Hoboken, N. J. Contact: J. M. Bodnar, Chief Materials Research Branch, SMUPA-VD6, Picatinny Arsenal, Dover, N. J., telephone (Area Code 201) 328-3183.

AF Industry Data Management Symposium, Sept. 22-23, at International Hotel, Los Angeles, Calif. Sponsors: Ballistic Systems Division (SBAMA), DOD and Industry. Contact: Lt. Col. D. A. Cook (BSOM), Norton AFB, Calif., telephone (Area Code 714) 889-4411, ext. 8021.

Sixth Symposium on Non-Destructive Testing, Sept. 28-30, at Sheraton-Dayton Hotel, Dayton, Ohio. Sponsor: Air Force Materials Laboratory (AFSC). Contact: Mr. Rowand (MAG), Air Force Materials Laboratory, Wright-Patterson AFB, Ohio 45433, telephone (Area Code 513) 253-7111, ext. 40209.

Third Symposium on the Plasma Sheath, dates undetermined. at New England Life Hall, Boston, Mass. Sponsor: Air Force Cambridge Research Laboratories. Contact: Charles E. Ellis (CRDM), Air Force Cambridge Research Laboratories, L. G. Hanscom Field, Mass. 01731, telephone (Area Code 617), CRestview 4-6100, ext. 3707.

OCTOBER 1965

Ninth Annual Organic Chemistry Conference, Oct. 5-6, at Natick, Mass. Sponsor: U. S. Army Natick Laboratories. Contact: Dr. Louis Long, Jr. Asst. Head, Organic Chemistry Laboratory (PRD), U. S. Army Natick Laboratories, Kansas St., Natick, Mass.

J. M. Burgers' 70th Anniversary Symposium on the Dynamics of Fluids and Plasmas, Oct. 6-8, at the University of Maryland, College Park, Md. Sponsor: Air Force Office of Scientific Research. Contact: P. A. Thurston (SREM), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D. C., telephone (Area Code 202) OX 6-3443.

1965 Congress of the International Federation for Documentation (FID), Oct. 7-16, at Washington, D. C. Sponsors: Air Force Office of Scientific Research, Office of Naval Research, Army Research Office and National Science Foundation and Council on Library Resources. Contact: Rowena Swanson (SRIR), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D. C. 20333, telephone OXford 6-5374.

NOVEMBER 1965

V/STOL Symposium, Nov. 3-4, at Wright-Patterson AFB, Ohio. Sponsor: American Helicopter Society. Host: Aeronautics System Division, Research and Technology Division and Systems Engineering Group. Contact: Geo. Dausman, Wright-Patterson AFB, Ohio, telephone (Area Code 513) 253-7111, ext. 25104 or 23164.

Fourth Hypervelocity Techniques Symposium, Nov. 15-16, at Arnold Air Force Station, Tenn. Sponsors: Arnold Engineering Development Center, ARO, Inc., and Denver Research Institute. Contact: J. Lukasiewicz, Arnold Air Force Station, Tenn., telephone (Area Code 615) 455-2611, ext. 7204 or 7205.

Fourth Annual Symposium on Physics of Failure in Electronics, Nov. 16-18, at the Illinois Institute of Technology Research Institute. Co-sponsors: Rome Air Development Center and the Illinois Institute of Technology Research Institute. Contact: Joseph Schramp (EMERP), Rome Air Development Center, Griffiss AFB, N. Y., telephone (Area Code 315) FF6-3200, ext. 2813.

DECEMBER 1965

International Symposium on Differential Equations and Theory of Systems, Dec. 27-30, at the University of Puerto Rico. Sponsors: Air Force Office of Scientific Research, Brown University and the University of Puerto Rico. Contact: Maj. B. R. Agins (SRMA), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D. C. 20333, telephone (Area Code 202) OXford 6-1302.

All meetings listed are Unclassified.

CALENDAR OF EVENTS

Aug. 24-27: Western Electronic Show and Conference, San Francisco, Calif.

Aug. 31-Sept. 2: Twelfth National Conference of the Armed Forces Management Assn., Washington-Hilton Hotel, Washington, D. C.

Sept. 2-4: Sixth Armored Div. reunion, Chicago, Ill.

Sept. 3-5: Twenty-Ninth Div. Assn. meeting, Akron, Ohio.

Sept. 3-6: Tenth Armored Div. Assn. meeting, New York, N. Y.

Sept. 4-6: Society of the Fifth Div. meeting, Washington, D.C.

Sept. 4-6: Century Assn. (100th Inf. Div.) meeting, Washington, D. C.

Sept. 9-12: Society of the First Div. meeting, Pike, N. H.

Sept. 10-12: Thirty-Fourth Infantry Div. Assn. meeting, Omaha, Neb.

Sept. 17-19: Eighty-Seventh Infantry Div. Assn. meeting, Dayton, Ohio.

Sept. 12-15: American Road Builders Assn. meeting, Kiamesha Lake, N. Y.

Sept. 12-17: American Chemical Assn. meeting, Atlantic City, N. J.

Sept. 13-16: Society of Auto Engineers meeting, Milwaukee, Wis.

Sept. 16-17: Mechanical Engineers Mfg. Conference, New York, N. Y.

Sept. 18-19: Wisconsin Aerospace Exposition, Milwaukee, Wis.

Sept. 19-22: American Institute of Chemical Engineers meeting, Rochester, N. Y.

Sept. 21-23: American Society of Industrial Security meeting, Atlanta, Ga.

Sept. 22-24: International Conference on Military Electronics, Washington, D. C.

Sept. 22-26: Twentieth Annual Convention of National Defense Transportation Assn., Detroit, Mich.

Sept. 26-29: National Defense Transportation Assn. meeting, Detroit, Mich.

Sept. 26-29: National Institute of Gov. Purchasing meeting, Washington, D. C.

Sept. 27-28: Mountain State's Governors Conference on Science and Technology, Denver, Colo.

Sept. 27-30: Iron and Steel Engineers Assn. meeting, Pittsburgh, Pa.

Sept. 28-Oct. 1: International Congress on Experimental Mechanics, Washington, D. C.

Oct. 1-9: Air Force Worldwide Fighter Interceptor Weapons Meet, Tyndall AFB, Fla.

Oct. 7: Twenty-Second annual National Security Industrial Assn. (NSIA) meeting and dinner, Washington, D. C.

Oct. 7: NSIA Maintenance Advisory Committee Annual Fall meeting, Washington, D. C.

Oct. 7: NSIA Procurement Advisory Committee Annual Fall meeting, Washington, D.C.

Oct. 18-20: Defense Supply Assn. Annual Convention, Statler Hilton Hotel, Washington, D. C.

Oct. 19-20: Systems Effectiveness Conference, Washington, D. C.

Oct. 27-29: NSIA Meeting, Air Force Eastern Test Range and Cape Kennedy, Patrick AFB, Fla.

Microelectronics Working Group Formed at ECOM

A new working group, known as the Integrated Electronics Division, has been established at the U. S. Army Electronics Command (ECOM), Fort Monmouth, N. J.

The new unit was organized to consolidate and broaden microelectronics research and development at the ECOM Electronics Laboratories.

The division was formed largely by regrouping work in semi-conductor integrated circuits carried on in the Solid State and Frequency Control Division, and work in thin films and assemblies formerly conducted in the Electronic Parts and Materials Division.

The Solid State and Frequency Control Division will continue to operate primarily in the areas of microwave transistors and diodes, lasers, parametric amplifiers, atomic clocks and quarts crystal devices.

The Electronic Parts and Materials Division will now be engaged primarily in passive microwave devices, computer components, materials, cables, nuclear radiation effects and electro-mechanical devices.

Dr. James D. Meindl and Robert A. Gerhold have been named acting director and deputy director, respectively, of the new group.

Dr. R. S. Wiseman Heads New ECOM Laboratory

Dr. Robert S. Wiseman has been named to head the new Combat Surveillance-Target Acquisition Laboratory of the U. S. Army Electronics Command at Fort Monmouth, N. J.

Combat surveillance and target acquisition are two of the major areas in which the Electronics Command is emphasizing a build-up of in-house research and development capabilities to meet new military requirements.

Creation of the new laboratory was a major step in this direction according to Major General Frank W. Moorman, Commanding General of Electronics Command. The laboratory employs about 250 persons and is recruiting additional professional personnel toward a level of nearly 300 employees.

Dr. Wiseman, a native of Robinson, Ill., comes to the laboratory from a post as Warfare Vision Division chief of the Army Engineer Research and Development Laboratories at Fort Belvoir, Va.

SPEAKERS CALENDAR

OFFICE OF THE SECRETARY OF DEFENSE

Maj. Gen. J. B. Bestic, Dep. Dir. for National Military Command System, Defense Communications Agency, at Amateur Radio Relay League meeting, Denver, Colo., July 17.

Hon. Harold Brown, Dir., Defense Research and Engineering, at DOD Summer Students Seminar, Washington, D. C., Aug. 6.

Hon. Paul R. Ignatius, Asst. Secretary of Def. (Installations and Logistics), at American Bar Assn. meeting, Miami, Fla., Aug. 9.

ARMY

Maj. Gen. Winston P. Wilson, Chief, National Guard Bureau, participating as Military Grand Marshal in Aquatennial Parade, Minneapolis, Minn., July 17.

Brig. Gen. Walter E. Lotz, Jr., Dir. Army Research, at 1965 R&D Seminar, Fort Belvoir, Va., July 21.

Lt. Gen. Robert Hackett, Comptroller of the Army, at Army Comptrollership School, Syracuse University, Syracuse, N. Y., July 22.

Maj. Gen. William F. Cassidy, Chief of Engineers, at 1965 Research and Development Seminar, Fort Belvoir, Va., July 22.

Maj. Gen. Winston P. Wilson, Chief National Guard Bureau, at graduation exercises, California Military Academy, Camp San Luis Obispo, Calif., July 24.

Hon. William P. Durkee, Dir., Civil Defense, Office, Secretary of the Army, at Governor's Conference, Minneapolis, Minn., July 27.

Brig. Gen. Raymond B. Morlin, Dir. Plans and Programs, at 3252nd USAR R&D Unit Nuclear Science Seminar, Oak Ridge, Tenn., July 29.

Lt. Gen. W. B. S. Wright, Chief, Office of Reserve Components, at graduation exercises, New Jersey Military Academy, Sea Girt, N. J., Aug. 21.

NAVY

Gen. C. B. Cates, USMC (Ret.), at launching of USS TRIPOLI (LPH-10), Ingalls Shipbuilding Corp., Pascagoula, Miss., July 31.

VAdm. I. J. Galantin, Chief of Naval Material, at the Armed Forces Staff College, Norfolk, Va., Aug. 31.

AIR FORCE

Maj. Gen. B. I. Funk, Commander, Space Systems Div., AFSC, at Society of Photographic Instrumentation Engineers meeting, San Francisco, Calif., Aug. 16.

Maj. Gen. E. B. LeBailly, Dir. of Information, at American Legion Convention, Portland, Ore., Aug. 19-21 (appearance only).

Brig. Gen. R. F. Bromily, Asst. Dep. Chief of Staff, Materiel, Air Defense Command, at University of Colorado, Boulder, Colo., Aug. 21.

PDP Renamed; Seminars Scheduled To Explain Changes

The Department of Defense announced clarification of the policies for initiation of major engineering and operational systems development projects. This clarification is contained in a revision of DOD Directive 3200.9, which also renames the procedure for initiation of major projects. This procedure, previously called Project Definition Phase, has been renamed Contract Definition and the study period preceding Contract Definition has been identified as Concept Formulation. Other changes in the Directive include:

- Increased emphasis on the initiation of engineering development rather than initiation of Contract Definition.
- Clarification and simplification of procedures for initiation of engineering development.
- Clarification of the degree of technology advancement allowed in engineering development.

In order to provide a better understanding of these policies, the DOD, in cooperation with National Security Industrial Association (NSIA), Aerospace Industries Association (AIA) and Electronic Industries Association (EIA), is sponsoring a series of indoctrination seminars throughout the country this summer. These seminars, which will include both industry and DOD personnel, are scheduled as follows:

Top Management Indoctrinations (Three-Hour Sessions):

Washington, D. C., August 17-18, 1965.

Los Angeles, Calif., August 20, 1965.

Middle Management Orientations (Three-Hour Sessions):

Los Angeles, Calif., August 23-24, 1965.

San Francisco, Calif., August 26, 1965.

Washington, D. C., August 30-31 and September 1, 1965.

Fort Monmouth, N. J., September 2, 1965.

Boston, Mass., September 8, 1965.

Philadelphia, Pa., September 10, 1965.

Denver, Colo., September 13, 1965.

Dallas, Tex., September 15, 1965.

St. Louis, Mo., September 17, 1965.

Dayton, Ohio, September 20, 1965.

Detroit, Mich., September 22, 1965.

Huntsville, Ala., September 24, 1965.

Instructor Workshops (3 days each):

Washington, D. C., September 27-29, October 11-13, 1965.

Los Angeles, Calif., October 4-6, 1965.

Dr. J. Sterling Livingston, President of the Management Systems Corporation, and Mr. James W. Roach, Assistant Director for Engineering Management, Office of Director of Defense Research & Engineering, will head the Top Executive sessions. Middle Management and Instructor Workshop sessions will be led by other Management Systems Corporation and DOD representatives.

Arrangements for participation in these indoctrination sessions will be made for industry participants through the cooperating industrial associations and for DOD participants through the Military Departments. The industry focal point for the Indoctrination Program is Paul A. Newman of the Washington NSIA staff. At the conclusion of the indoctrination sessions, the materials used in these sessions will be made available to industry and DOD organizations for any further indoctrination they may wish to conduct.

Project Management—U.S. Navy

(Continued from Page 2)

don't operate." Vice Admiral I. J. "Pete" Galantin who assumed the duties of CNM following Admiral Schoech's retirement March 1, 1965, follows a similar policy.

Both admirals, as well as their principal assistants, are among the Navy's foremost "material managers." The present CNM, Admiral Galantin, assumed his duties after serving as Director of Special Projects. The Special Projects Office produced Polaris, the first and best known of the Navy's designated projects.

As Director of Special Projects, Admiral Galantin was one of the Navy's principal project managers. In speaking to a class of prospective project managers at the Defense Weapon Systems Management Center at Wright-Patterson Air Force Base, Ohio, on April 9, 1965, he said. "I want the Navy members of this class to understand that I recognize and have faced some of the problems that you, as project managers, will face. You will have a sympathetic boss."

The Navy is now activating projects at an unprecedented rate. To observers of organization and management trends within the military forces, the Navy's current shift toward project management is one of the most dynamic organizational trends of recent years.

What does the Navy's move to adopt project management on a large scale mean to members of industry? It means, primarily, that one person, the project manager. will have full management control over the evolution of each of the Navy's most significant weapons systems. This control will be unequivocal. The contractor, or prospective contractor, will know exactly who is responsible for—and fully capable of—controlling the management destiny of each new Navy weapon system. Each member of industry—and everybody else—will know exactly "who is in charge here."

The increasing emphasis on project management will also mean better utilization of financial resources, as well as better utilization of technical and scientific personnel. This will be advantageous to the taxpayer.

The present structure of the Naval Material Support Establishment is ideally suited to strengthen the effectiveness of project management. If the Navy reaches its goals for the future in this important area, the project management technique will produce completely supportable weapons systems, delivered on time and within the prescribed cost and performance limits.

The only objective of all this effort is to maintain and strengthen the operating forces upon which the defense of the nation depends.

Project Managers

Naval Material Support Establishment

PROJECT	MANAGER
Fleet Ballistic Missile System (PM-1)	RAdm. Levering Smith Rm. 3004, Munitions Building (Area Code 202) OXford 61502
F-111B/Phoenix (PM-2)	RAdm. W. E. Sweeney Rm. 2243, Munitions Building (Area Code 202) OXford 67770
Surface Missile Systems (PM-3)	RAdm. E. T. Reich Rm. 3416, Munitions Building (Area Code 202) OXford 62661
Anti-Submarine Warfare Systems (PM-4)	RAdm. C. A. Karaberis Rm. 2034, Munitions Building (Area Code 202) OXford 63231
Instrumentation Ships (PM-5)	Capt. A. F. Hancock Rm. 4013, Main Navy Building (Area Code 202) OXford 64688
All-Weather Carrier Landing System (PM-6)	Capt. F. R. Fearnow Rm. 1904, Main Navy Building (Area Code 202) OXford 66618
REWSON (PM-7)	Cdr. D. G. Wilson Rm. 3824, Main Navy Building (Area Code 202) OXford 67498
AIMS (PM-8)	Capt. N. D. Champlin Rm. 4707, Munitions Building (Area Code 202) OXford 68856
OMEGA (PM-9)	Cdr. M. X. Polk Rm. 2512, Main Navy Building (Area Code 202) OXford 62422
E-2A	Mr. E. J. Raymond Rm. 3811, Munitions Building (Area Code 202) OXford 65695
F-4	Capt. C. C. Sanders Rm. 3712, Main Navy Building (Area Code 202) OXford 64657
A-6	Lt. Col. E. H. Finlayson Rm. 3077, Main Navy Building (Area Code 202) OXford 65003
A-5	Cdr. L. B. Hoop Rm. 3076, Main Navy Building (Area Code 202) OXford 63018
A-7	Capt. C. M. Cruse Rm. 3815, Main Navy Building (Area Code 202) OXford 65431
OV-10	Capt. J. L. Coleman Rm. 2W47, W Building (Area Code 202) OXford 67610
DASH	Cdr. R. G. Mellin Rm. 3063, Main Navy Building (Area Code 202) OXford 04408
Mark 44 Torpedo	Cdr. D. A. MacGillivray Rm. 3069, Main Navy Building (Area Code 202) OXford 63704
Mark 46 Torpedo	Capt. M. W. Whitaker Rm. 3066, Main Navy Building (Area Code 202) OXford 61704
Mark 48 Torpedo	Capt. D. B. Maher Rm. 3067, Main Navy Building (Area Code 202) OXford 62929
SUBAJAD	Cdr. W. H. Williams Rm. 1427, Main Navy Building (Area Code 202) OXford 64339
SATCOM	Mr. L. E. Johnson Bailey's Cross Roads, Va. (Area Code 202) OXford 44413 Extension 67

Munitions Building, 19th & Constitution Ave., Wash., D. C.
Main Navy Building, 18th & Constitution Ave., Wash., D. C.

Value Engineering Specialists To be Added to DOD

Secretary of Defense Robert S. McNamara has approved the addition of 265 Value Engineering Specialists to the Military Departments and the Defense Supply Agency in an attempt to curb unnecessary DOD spending.

The personnel increase, which will include 247 civilian and 18 military personnel and an additional Value Engineering specialist to be employed by the Office of the Secretary of Defense, was recommended by a Value Engineering Evaluation Group.

Composed of representatives from the Military Departments and the Defense Supply Agency, the evaluation group made its recommendations after completing a study of where value engineering personnel could most productively be assigned and what savings could be achieved by them.

The group will continue to meet periodically to provide overall direction to the recruitment, training and assignment of personnel and to monitor the results achieved from this personnel augmentation.

It is estimated that the move to hire additional specialists will result in a savings of at least $500 million in value engineering by FY 67.

The value engineering study was requested last February by Secretary McNamara who feels that one of the most obvious and continuous sources of savings in Defense procurement lies in constantly challenging design specifications to make certain that DOD is buying only what is needed.

Changes in specification resulting from DOD's program of Value Engineering — often referred to as the elimination of gold plating — produced savings totaling more than $250 million in FY 64.

NOTES FOR EDITORS

Briefed below are some events and projects within the Department of Defense which may be of interest to writers and editors. If further information on any of these topics is desired, please write to Chief, Magazine and Book Branch, Office of the Assistant Secretary of Defense, Public Affairs, Washington, D. C. 20301.

NEW SYSTEMS, EQUIPMENT JOIN ARMY INVENTORY

Several new systems and pieces of equipment have joined the Army in the past few weeeks. FIELD AUTOCLAVE — A portable autoclave, or sterilizer, has been designed specifically for the Special Forces. It is capable of steam sterilizing surgical dressing and instruments at 250° using any external heat source. NO SWITCHBOARDS—Pushbutton wireless telephones may soon be developed by Martin Company using touch-tone handsets to automatically select available frequencies and then broadcast the "electronic address" of the person being called. BULLDOZER — A bulldozer with a Sunday punch departs from the usual method of forcing its big blade across the ground; this bulldozer will use specially designed hydraulic pistons to slam the blade ahead. Called "impact assist," the system will permit a greater work load by a lighter tractor.

AIR FORCE THUNDERSTORM RESEARCH

The U. S. Air Force has completed a joint five-year research project with the U. S. Weather Bureau, the Federal Aviation Agency, the U. S. Navy and the U. S. Army, designed to advance the technology of meteorology, weather forecasting, storm control and aircraft structural design criteria.

The accomplishments are many but one example is project Rough Rider and the case of Captain Joe G. Kondracki, USAF.

On May 5, 1962, Capt. Kondracki, assigned as an experimental flight test officer at Wright-Patterson AFB, Ohio, began a series of test flights to gather data on thunderstorms. He successfully completed 41 penetrations, accumulating 160 minutes of flight, in the most severe areas inside the storm concentrations. During a penetration mission flown May 20, 1962, the turbulence was so severe that the entire pilot head was torn from the nose boom of the F100F causing loss of airspeed and altitude instrument information. At the same time, the engine experienced a series of compressor stalls as the aircraft encountered virtually a wall of water.

In spite of these adverse conditions, Capt. Kondracki continued flying the aircraft through the main cell of the storm for a distance of some 135 nautical miles allowing the observer in the rear seat to operate the test instruments.

USAF AIR TRAFFIC CONTROLLERS SAVE 1,745 AIRCRAFT

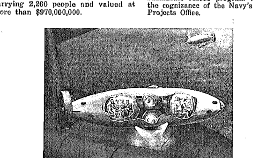
USAF Air Traffic Controllers (includes radar) saved 113 aircraft with 371 persons aboard during 1964. Aircraft involved were valued at $89,800,000. These were both military and civilian aircraft involved in emergencies that could have resulted in loss or damage, fatalities or injuries to people. A save is determined by a board of senior aircraft controllers who apply very critical criteria. A save is credited only when the actions were positively instrumental in aircraft recovery. In the nine years since January 1956 USAF air traffic controllers have saved 1,745 aircraft carrying 2,260 people and valued at more than $970,000,000.

MARINE CORPS HALVES PHYSICAL FITNESS TRAINING — SAME RESULTS

A new circuit training procedure at Parris Island has proved that Marines can achieve the same level of physical fitness in 13½ hours of training as they can in 31 hours under the present conventional system. The concept is an adaptation of British and Belgian methods which have become highly popular in the United States. The circuit training revolves around a track with 12 stations, each of which develops different muscles in the body. General Wallace M. Greene, Commandant of the Marine Corps, has expressed satisfaction with the new training method and has directed other units to begin using it.

SUBMARINE RESCUE VESSEL

Initial design and development of a submarine rescue vessel to be operational early in the 1970's has been started by the Navy. The craft will be 40 feet long and 8 feet in diameter. The rescue craft, capable of reaching any depth, will mate with the escape hatch of the downed submarine forming an air-tight seal. Survivors — 13 to 14 per trip — enter the small center sphere of the "triple-bubble" pressure hull. The triple-bubble design has optimum mating bell location, requires no disassembly for air transportation and provides a desirable internal arrangement for operators and rescuees. Management of the submarine rescue program is under the cognizance of the Navy's Special Projects Office.



Trapped crewmembers are retrieved from a disabled submarine in this artist's concept of the Navy's new rescue vessel. (See Last Item Above)

Reliability Study Results Available To Industry & Research Organizations

Plans have been announced by the U. S. Army to distribute unclassified results to all interested industrial and educational research organizations of a study begun last year to determine the reliability of materiel.

The study, being conducted under contract to the University of Michigan, is sponsored by the U. S. Army Research Office with the aim of establishing a Scientific and Technological Applications Forecast (STAF) on materiel failures. Inquiries concerning the project should be addressed to the Chief of Research and Development, Attn: Research Plans Office, Hq. Department of the Army, Washington, D. C. 20310.

Included in the STAF will be a published summary of major areas of interest to military research and development organizations, industry, universities and other groups concerned with military materiel requirements.

Areas to be covered include a forecast of the state of the art over the next 20 years and a research plan suggesting how identified gaps in the state of the art may be filled. Also included in the study will be a matrix section reflecting the scientific and engineering interdisciplinary relationships and reactions of some 17 life-cycle program milestones and five major categories of scientific and engineering considerations and personnel engaged in reliability research activities.

Colonel Raymond S. Isenson, Chief of the Army Research Office, stated that the project was begun after a review and sampling of reliability activities in the research, development and production areas of various organizations during the past three years.

Although much reliability oriented research has been accomplished since World War II, Colonel Isenson feels that there is an urgent need to compare the results of these research efforts to identify those which are getting too much attention as well as those which may be lacking support.

The mechanical reliability area is being particularly emphasized since reliability activities in the electronic field have received significant attention and financial support from military establishments during the past few years. Colonel Isenson went on to state that the current administrative efforts to reduce costs and to obtain the optimum return on basic and exploratory research dollars not only justified but made the STAF essential to increase the effectiveness of research planning.

Technical representative for the contracting office is Sumner Meiselman of the Advanced Technology Branch, Research Plans Office. Dr. Charles Lipson of the Mechanical Engineering Department, University of Michigan, has been assigned as project director.

Colonel Isenson indicates that work is proceeding on schedule. Accomplishments to date include the review of 4,000 classified and 10,000 unclassified abstract reports from the Defense Documentation Center. This includes all the reports relating to reliability furnished to the center by various activities sponsored by the Army, Navy and Air Force.

In addition, some 1800 National Aeronautics and Space Administration abstracts and technical reviews, prepared by the Research Triangle Institute concerning reliability oriented papers published in professional and trade journals, have been analyzed. An unspecified number of complete papers and texts are being scrutinized as part of the input to the state of the art analysis. However, this effort is not considered or required to be an exhaustive analysis, but rather a sufficiently comprehensive one to identify and establish the state of the art on reliability.

One of the most difficult aspects of this Scientific and Technological Applications Forecast is identifying and establishing the relationship of the vast number of scientific and engineering factors directly affecting the reliability of materiel. For example, one readily recognizes that the selection of materiel is an important consideration, but other equal though less familiar factors include environmental conditions, physical and mechanical loading techniques, human factors and evaluation methods, all interacting to affect materiel reliability. The problem becomes more complex when it is observed that these interactions do not have a fixed or constant relationship but vary as the materiel system progresses through its life cycle from concept through development, production and use phases; or, in the jargon of reliability, the specification, prediction, verification and preservation phases. As a result of the managerial team effort, Dr. Lipson's assistants have tentatively identified approximately 200 interacting groups of matrix elements which are further subdivided. These major groupings do not include the 76 environmental factors which have also been identified as causing damage to materiel and which incidentally are not generally specified in system development contracts. These environment factors will be discussed in the STAF.

Colonel Isenson stated that the managerial team expected that certain elements of the scientific and technological forecast, such as the selected directory and bibliographical sections, would be of value to industry and Government organizations. In view of this, the University of Michigan will solicit the assistance and cooperation of many industrial organizations and professional and technical groups for source information. For example, it is well-known that the Society of Automotive Engineers, the Society of Mechanical Engineers, the Aerospace Industries Association and others have ad hoc and standing committees engaged in reliability efforts. Yet much of this information is not known or readily available to personnel who are actively engaged in work which can or should advantageously use the knowledge and/or engage the services of these groups. One of the motives of the STAF is to open channels of communications among personnel working toward the common goal of known reliability of materiel.

Another important section of the STAF will be the identification of basic and applied research methods needed to fill voids in the total reliability effort. This identification will enable organizations to channel research support to the needed areas rather than duplicate efforts already accomplished.

NSIA Establishes Ocean Science & Technology Committee

The Executive Committee of the National Security Industrial Association has authorized the establishment of an Ocean Science and Technology Advisory Committee.

The mission of the committee will be to coordinate the complex interrelationship between anti-submarine warfare and oceanography. Interests of the committee will include ocean engineering, ocean technology and the ocean's effect on the military and economic security of the United States.

The new organization will serve the needs of many corporations involved in oceanography even though they are not concerned directly with the military application of the science.

Liaison has already been established with the Interagency Committee on Oceanography, the Assistant Secretary of the Navy for Research and Development and the Oceanographer of the Navy.

DOD Report on Small Business Procurement During July 1964-April 1965

Small business firms received $4,052 million in defense prime contract awards during July 1964-April 1965, an increase of $352 million over the amount received during the same 10 months of the previous fiscal year.

As can be seen in the table below, small business received 20.2 per cent from July 1964-April 1965, compared to 17.3 per cent for the same months of the previous fiscal year.

To insure that small firms would receive a fair share of defense work, $1,258 million in contracts were set aside during this same period for competition among small concerns only. Large firms were not permitted to bid on this work.

SMALL BUSINESS SHARE OF DEFENSE PROCUREMENT

(Amounts in Thousands)

Type of Firm and Category of Procurement	Fiscal Year to Date 1965 Jul 64-Apr 65	Fiscal Year to Date 1964 Jul 63-Apr 64
DEFENSE PROCUREMENT (PRIME CONTRACTS) FROM ALL BUSINESS FIRMS	$20,020,718	$21,334,065
Missile & Space Systems	3,571,502	4,629,294
Other Major Hard Goods	8,768,501	9,346,339
Services	1,255,295	1,247,272
Commercial Items: Construction & all Purchases under $16,000	5,667,534	5,496,953
Civil Functions	757,886	614,207
DEFENSE PRIME CONTRACTS TO SMALL BUSINESS FIRMS	4,052,136	3,699,821
Missile & Space Systems	49,332	70,982
Other Major Hard Goods	725,200	614,167
Services	267,881	324,314
Commercial Items, Construction & all Purchases under $10,000	2,690,977	2,420,420
Civil Functions	318,746	269,938
PERCENTAGE OF DEFENSE PRIME CONTRACTS TO SMALL BUSINESS FIRMS	20.2%	17.3%
Missile & Space Systems	1.4	1.5
Other Major Hard Goods	8.3	0.6
Services	21.3	26.0
Commercial Items, Construction & all Purchases under $10,000	47.5	44.0
Civil Functions	42.1	43.0

Small Business Report Merges With D.I.B.

Beginning with this issue, the *Defense Industry Bulletin* will provide the coverage of small business and economic utilization (labor surplus) policy formerly furnished by the *Small Business Report*, a quarterly publication of the Office of the Assistant Secretary of Defense (Installations & Logistics).

The Bulletin welcomes this merger as a step in better meeting the interests of the entire industrial community, including both large and small business, subcontractors as well as prime contractors. Since most sizeable defense contracts involve numerous interactions and interrelationships among a variety of contractors, the merger is a step which, it is hoped, will increase understanding and cooperation between every member of the defense industry team. Additionally, the savings to the Government, which consolidation of the two publications makes possible, contributes in some small part to the common goal of achieving a dollars worth of defense for every dollar spent.

Subscribers of the *Small Business Report* have been included on the *Defense Industry Bulletin* mailing list.

The Editors.

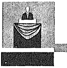
Maine Industries Product Show Scheduled

The Department of Defense will conduct a procurement counseling and assistance program during the Maine Industries Products Show to be held at Bangor, Maine, Aug. 24-27.

DOD's participation in the show is the result of an invitation extended by Governor John H. Reed of Maine.

Small business and labor surplus area specialists from the military services will be on hand to offer individual counseling and assistance to people interested in defense prime and sub-contracting opportunities.

Current invitations for bids and requests for proposals will be available in addition to lists of items for which military buyers are seeking additional suppliers.



FROM THE SPEAKERS ROSTRUM

U. S. Air Force Highlights DOD/NSIA Advanced Planning Briefings

This month's "From The Speakers Rostrum" presents excerpts from the Air Force addresses given at the regional DOD-NSIA Advanced Planning Briefings for Industry held during March and April in Los Angeles, New York City, Chicago, Dallas and Washington, D. C.

U. S. Air Force Advanced Planning Requirements

Lt. Gen. W. A. Davis, USAF
Vice Commander
Air Force Systems Command

Air Force Systems Command

Let us start with a brief look at the wide-ranging Air Force operational responsibilities.

First, the Strategic Air Command has responsibility for the bulk of the nation's strategic strength — for delivering on target from 80 to 90 per cent of the nation's nuclear power. This requires a balanced mix of aircraft and missiles. . . .

Second, the Tactical Air Command has responsibility for combat-ready forces capable of conducting world-wide tactical air operations for the United States Strike Command. . . .

Third, the Air Defense Command is our nation's air component of the joint U. S.-Canadian North American Air Defense Command. It has a vital role in the detection, identification, interception and destruction of hostile manned bombers in the event of attack on the North American Continent. . . .

Fourth, the Military Air Transport Service has the Department of Defense responsibility for global airlift and the Air Force responsibility for air rescue, air weather and air photographic and geodetic services. . . .

The total Air Force budget for FY 66 is $18.9 billion. The Air Force Systems Command (AFSC) has responsibility for approximately 30 per cent of the Air Force budget or about $5.4 billion. We administer more than 40,000 active contracts with a face value of approximately $50 billion and with a current unliquidated balance of over $5 billion. We have contracts with more than 5,000 different contractors.

The task of the Air Force Systems Command is to provide qualitatively superior systems for the Air Force. In order to perform this mission, we must advance aerospace technology as rapidly as is practical and adapt it on a timely basis to the needs of our aerospace systems.

AFSC Organization.

Now let us look at how we are set up to perform our mission and how the budget is broken down within Systems Command. The division and centers fall into five major areas of concern — threat, technological base, product, support and test.

First, we must assess the threat. This is the task of the Foreign Technology Division (FTD) which acquires, analyzes and disseminates foreign scientific and technical information to assess its value for possible application in the development of the Air Force weapon systems.

The FTD budget for FY 65 was over $27 million and is over $25 million for FY 66.

Second, we must advance our technological base. This is the aim of the laboratories of the Research and Technology Division (RTD) and the Aerospace Medical Division (AMD).

The Research and Technology Division is responsible for maintenance of a broad base of exploratory and advanced technology programs to aid in timely development of aerospace systems. It has seven laboratories.

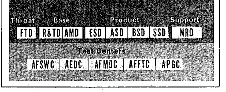
The budget for the Research and Technology Division was over $497 million for FY 65 and is over $565 million for FY 66.

The Office of Aerospace Research (OAR), which is not a part of Systems Command, has responsibility for basic research. The OAR programs provide necessary technology input to the technology programs of RTD.

The Aerospace Medical Division conducts bioastronautics research and development in support of aerospace programs, the USAF personnel system, clinical and aerospace medicine, and provides specialized educational programs in aerospace medicine.

The AMD budget for FY 65 was over $38 million and for FY 66 is over $37 million.

Third, we have to develop and acquire new systems for the Air Force — this is the task of the four product divisions, the Electronic Systems Division, the Aeronautical Systems Division, the Ballistic Systems Division and the



Space Systems Division. I will cover them in more detail in just a moment.

Fourth, our national ranges provide obviously essential support to our ballistic and space systems programs. The National Range Division (NRD), which is our newest division, plans, operates and maintains assigned range facilities in support of national ballistic missile and space programs. . . .

The NRD budget for FY 65 was over $197 million and for FY 66 is almost $225 million.

Within Systems Command the four product divisions are responsible for the bulk of our budget. They are also the divisions that you, as contractors, naturally have primary interest in.

The Electronic Systems Division (ESD) is responsible for development, acquisition and delivery of electronic systems and equipment for command and control of aerospace forces. This includes ground-based warning, aerospace support systems, satellite tracking and ground assessment of objects in space.

The ESD budget for FY 66 is over $314 million as compared with $394 million for FY 65.

The Aeronautical Systems Division (ASD) is responsible for development, acquisition and delivery of all aircraft, nonballistic missiles and related equipment. This division also conducts programs in the fields of limited war, counterinsurgency and reconnaissance. . . .

The ASD budget for FY 66 is almost $2.4 billion, which compares to $2.6 billion for FY 65.

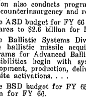
The Ballistic Systems Division (BSD) manages Air Force ballistic missile acquisition programs and DOD programs for Advanced Ballistic Re-Entry Systems. Responsibilities begin with system concepts and include development, production, delivery of operational systems and site activations. . . .

The BSD budget for FY 65 was $1.5 billion and is $1 billion for FY 66.

The Space Systems Division (SSD) is responsible for development, acquisition and launch of space vehicles and research satellites. These responsibilities include launch support and on-orbit control.

The SSD budget for FY 66 is $469 million which is an increase over the FY 65 figure of about $451 million.

Research & Technology Division Air Force Systems Command



Maj. Gen. M. C. Demler, USAF
Commander
Research & Technology Div.
Air Force Systems Command

Let us begin with the Air Force Research Program. This basic research generates much of our new fundamental knowledge and is generally long term with its goals forecast against broad areas of Air Force interest. The Research Program is currently funded for $93 million and will increase to approximately $103 million in FY 1966.

The Air Force Research Program is managed by the Air Force Office of Aerospace Research (OAR) in Washington, D. C., and conducted by its laboratories and field organizations.

The OAR Aerospace Research Laboratories concentrate their activities in the technical domains of general plasma and solid state physics chemistry research, hypersonic research, theoretical and applied mathematics. The work is toward the basic end of the research spectrum. Individual contracts are generally small and essentially seek to buy brain power to supplement the in-house capability. Large facilities and amounts of equipment are not essential for contractors to compete in this type of work.

Typical of the work of the OAR Air Force Cambridge Research Laboratories is the broad environmental research program which it conducts. The program extends from the analyses of terrain features for identifying unique landing sites for specialized aircraft operations and returning space vehicles to the study of solar electromagnetic and charged particle radiation to determine the extent of this danger to our astronauts. . . .

The Air Force Office of Scientific Research serves as our main interface with the academic research world. It sponsors a broad extramural contract and grant progam in all areas of scientific interest to the Air Force. It welcomes proposals for research work from all academic sources.

Exploratory Development.

Next in the research and development spectrum is Exploratory Development. Here the Air Force laboratories apply technology to the solution of specific military problems, short of major development programs. The program seeks to demonstrate the feasibility of a proposed solution. This type of work may vary from applied research experiments to quite sophisticated bread board hardware testing, as well as study and analysis efforts. . . .

As I discuss the Exploratory Development program, I will do so in terms of the major technical areas in which the Air Force seeks your assistance, and will indicate the Air Force laboratory which has prime management responsibility for each area.

The Air Force Flight Dynamics Laboratory conducts programs in structures, flight mechanics, flight control, vehicle dynamics, environmental control and recovery and crew station. . . .

The total Exploratory Development contract program in the flight dynamics area will be a little over $19 million in FY 1966.

I am strongly convinced, as I am sure many of you are, that materials research and development will continue to be a key pacing technology for future weapon systems. The Air Force Materials Laboratory will be looking to its industry counterparts not only to create new materials but to apply these new materials in components and subsystems. Two areas that will continue to receive major emphasis by the Air Force are polymers and composite materials. . . .

The Air Force Exploratory Development contract program in materials will run approximately $23 million in FY 1966.

The Air Force Weapons Laboratory has several unique requirements. One continuing problem is the determination of the vulnerability of our weapon systems to a nuclear environment. We are constantly faced with the need to test whole systems, subsystems and components in an appropriate nuclear environment. This is not possible; hence we seek to simulate the effect of nuclear weapons by various techniques, in order to obtain further knowledge in this area. We will continue to require your ideas and assistance in the development of simulation techniques and in the refinement of mathematical models in this field.

The Air Force also has an organization responsible for conventional weapon R&D, the Directorate of Armament Development at Eglin Air Force Base, better known throughout the Air Force as RTD's Detachment 4. While interested in the long range view of conventional weapon development, Detachment 4 specializes in the quick response, rapid fire fix wherever we encounter deficiencies in our conventional armament. As you realize this is an area of intense interest at present and Detachment 4 will contract for over $5 million on conventional weapon development in FY 1966.

The Air Force Avionics Laboratory has many technical objectives whose attainment will require contractor support. For example, we still have difficulties in communicating through a plasma sheath surrounding reentry vehicles. Investigations in this area include: (1) the use of coolants to control the temperature of hot ionized gases so that RF telementry communications may be received from or by the vehicle; (2) shaping techniques to alter the shock front thus partially reducing the ionization; and (3) use of strong magnetic fields as an aid to propagation. . . .

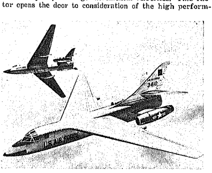
The Air Force Avionics Laboratory will let contracts for approximately $67 million for airborne electronics Exploratory Development in FY 1966.

In our Air Force Aero Propulsion Laboratory, efforts are under way in turbine engine and ramjet propulsion, electric propulsion, power generation and on improved fuels and lubricants. We are interested in high thermal efficiency engines with broad operating ranges and improved electric propulsion devices. Concurrent development of electric power generation equipment for such devices is also neded.

. . . Air Force Aero Propulsion Exploratory Development contract effort will amount to almost $32 million in FY 1966.

The Air Force Rocket Propulsion Laboratory works closely with industry in meeting Air Force requirements. In solid propellant rocket technology, we need to prove the flexibility of the restart-pulsed concept for air launched and last stage vehicles. Demonstration of thrust modulation is now in the very early stages. The pulsed and thrust variation technology is particularly important where large thrusts and high accelerations are required in braking applications.

In liquid propellant rocket technology we are working together for a simple storable propellant rocket module which can be used in multiples. For spacecraft, variable thrust and precise reproducible impulse and altitude control are necessary. Future orbital missions of the Air Force may require large incremental velocities. This factor opens the door to consideration of the high performance cryogenic propellants and the need for improvement in high pressure chamber design. . . .



Artist's Concept of the X-21A Laminar Flow Control Aircraft, an Air Force Advanced Development Program.

Air Force Exploratory Development contract effort in rocket propulsion in FY 1966 will be approximately $27 million.

The Rome Air Development Center is engaged in R&D programs in surveillance technology, intelligence collection processing, reconnaissance data handling, communications, computer technology and data presentation.

They will spend approximately $29 million on Exploratory Development in these areas in FY 1966.

The Aerospace Medical Division of the Air Force Systems Command is working in these technical areas: biological — medical sciences; arctic environment — human factors research; aerospace biomedical, biological and behavioral sciences; personnel requirements — concepts and techniques, classification, training and utilization; biological, bioinstrumentation, and behavioral research; and epidemiology and laboratory medicine.

This FY 1966 Exploratory Development contract effort will amount to approximately $13 million.

Advanced Development.

Let me shift gears now to discuss the Air Force Advanced Development programs. Here the Air Force seeks to experimentally demonstrate a technical capability beyond the existing state of the art. It is characterized by the development of hardware for experimental or operational test. This program provides a concrete interface between the laboratory technology programs I have been describing and the engineering design of military systems. It provides the two to three-year building blocks for system development in the form of demonstrated subsystem capabilities.

It is here that the type of realistic data required to initiate a Program Definition Phase (PDP) is developed. The Advanced Development program has a funding level of approximately $320 million for FY 1965 and is projected to increase to $479 million in FY 1966. . . .

Some of the larger and more complex Advanced Development programs require management procedures similar to those of the system programs, and are managed and procured by the System Divisions of the Air Force Systems Command. These are programs like the X-15 and the X-21A Laminar Flow Control Aircraft. . . .

Other programs are technology demonstrations such as the Air Force Materials Laboratory program to demonstrate the use of boron composite materials in a variety of structural roles in aerospace vehicles. Another example is the program to demonstrate V/STOL aircraft technology. . . .

Before going on, I want to give you a better feeling for the overall scope of the programs the Research & Technology Division laboratories are conducting. For example, in FY 1966 the RTD will spend approximately $464 million in Exploratory and Advanced Development programs. At present, the RTD has some 290 active projects with over 6,500 R&D contracts for a total value of approximately $1.6 billion.

I emphasize these numbers to indicate that these programs, unlike system development programs, are small enough to be within the capability of any organization having a competent technical staff and an interest in working with the Air Force. We solicit your participation in these programs. We will evaluate your proposal on the basis of Air Force interest and your technical competency to perform the job — not the size of your organization.

Several examples come to my mind which illustrate the close interrelationships that can be realized by the Air Force-industry team. For instance, the Air Force Rocket Propulsion Laboratory has, for some time, conducted a successful series of planning meetings with industry.

The Independent Research and Development Program is another example of the Air Force-industry team in action. This is a program of research and development without the sponsorship of a contract or grant and is recognized as essential in maintaining and improving the contractor's technical competence and competitive position. The DOD review of these programs, in which the Air Force participates, provides a valuable technical interchange in which the Air Force scientists and engineers learn of the latest accomplishments of industry and, at the same time, present Air Force areas of interest for industry to consider for future independent efforts. The effort has already paid many dividends to both our contractors and the Air Force. . . .

There are three basic ways to do business with the Air Force laboratories. First and the most frequently used, of course, is the direct solicitation method — that is we go out and directly solicit you to propose on a specific project, based on our knowledge of your capability and past accomplishment.

Second, we have the procurement synopsis program. We are required by law to place our programs in the Commerce Daily which is published by the Department of Commerce. You have an opportunity to review what we are doing and, if you have the capability, you are invited to get in touch with the designated Air Force Procurement office and ask to be included in the competitive bid process.

The last method is the unsolicited proposal. We invite industry at any time, based on knowledge of our requirements, to visit our laboratories and propose to us specific solutions to our problems.

Finally, the Air Force has gone to considerable effort to identify for you our major technical problems. Each Air Force laboratory has listed its major technical objectives in each assigned area of technology. These we have packaged in individual volumes, many of them classified, for each of 38 technical domains. We call these volumes our Technical Objective Documents, or TOD's, and they are available to scientific and industrial organizations who possess an R&D capability and the requisite security clearance. In each case only those documents are released which cover technical areas in which the organization has a capability. The TOD's describe not only Air Force technical objectives, but also cover the present state of the art, some possible approaches to our objectives and the Air Force laboratory which has prime responsibility in that technical domain. . . .

We would like all of you who have an interest, and an R&D capability, to participate in the TOD release program, and to submit proposals for solution to our problems. If your organization desires to participate in the program, you may obtain the necessary information from the nearest Scientific and Technical Liaison Office (see listing on page 21), or by writing to my headquarters at Bolling Air Force Base, D. C.

There are 23 Scientific and Technical Liaison Offices located throughout the United States, whose primary function is to provide the Air Force technical representation on R&D efforts which are the responsibility of, or are of direct interest to, the Air Force. These offices provide a direct channel for obtaining additional information on any of the programs I have discussed today. One of their major jobs is to help you in your dealings with the laboratories, divisions, or centers of the Air Force Systems Command.

I want to leave you with the thought that we in the United States have no corner on technological breakthroughs, and I don't have to emphasize to you the consequences of a potential enemy breakthrough that is not offset by a corresponding United States advance. To guard against such technological surprises as well as to provide the technology required to support our defense efforts, we must endeavor to maintain an aggressive research and technology program.

Procurement & Production Air Force Systems Command

Maj. Gen. G. F. Keeling, USAF
Deputy Chief of Staff for
Procurement & Production
Air Force Systems Command

The Aeronautical Systems Division at Wright-Patterson Air Force Base, Ohio, is responsible for the largest central procurement operation in our command. It has five major aeronautical systems in acquisition or project definition phase at this time.

The F-4 Phantom series . . . includes both fighter and reconnaissance versions.

From FY 65 funds we programmed several hundred aircraft for over $850 million, and in FY 66 we plan a sizeable additional buy for about $650 million. . . . The current program plans call for expenditures of around $2.5 billion, with deliveries extending well into 1968. . . .

There is probably little I can say about the F-111A which has not already been said. . . . From the FY 65 program, we will buy the first ten operational aircraft and additional operational aircraft are planned from FY 66 and subsequent funds. . . .

As you know, we are also developing the F-111B for the U. S. Navy, and the first four operational F-111B's are in the Fiscal 66 budget. . . .

There are hundreds of subcontractors, vendors and suppliers engaged in this program, and many hundreds more will be needed for this program.

The third major aeronautical system, the C-141, is a large air cargo and troop transport. . . .

We will acquire several hundred C-141's over the next several years. The total investment will be in excess of a billion dollars. The airplane is FAA "Type Certificated" and thereby has a high potential for commercial airline application.

Project definition contracts for the C-5A were awarded in late December 1964 to competing airframe and propulsion contractors. As now planned, this program will extend well into the 1970's, with a total program investment in excess of $2 billion.

The T-38, a modern twin engine supersonic jet pilot trainer, has been in acquisition for some time. Our FY 65 program includes over 140 airplanes, with a program cost of about $90 million. The FY 66 budget contains a planned program of $38 million. The F-5 is a ground support fighter version of the T-38, and we are buying it in support of military assistance programs. The FY 65 and 66 programs are about $85 million and will continue. . . .

The AN/ASN-24 (V) navigation computer is an excellent illustration of the multitude of black boxes required for this complete system, and it is also an excellent illustration of the subsystems, components and hardware items purchased by the Aeronautical Systems Division at an average rate of about $1 billion per year. . . .

Our current forecast of future purchases of this system is about $25 million. . . .

Moving now to the Electronic Systems Division (near Boston), the 407L (Tactical Air Control System) illustrates an integration of sophisticated radar, electronics computers and communications equipment . . . Some $43 million are in our FY 66 budget for acquisition of currently available hardware for this system.

Air Communications Network. Each year a substantial portion of the Air Force budget is used to acquire or to modernize specific links of the Department of Defense Global Communications System. Air Force purchases to support systems like this average several million dollars each year, and there is no reason not to expect this same level to continue in the future.

Spacetrack is another example of the 20-odd specialized major command, control and communication projects managed and procured by the Electronic Systems Division. The division's FY 65 program exceeded $350 million, and the FY 66 budget is over $300 million. . . .

At our Ballistic Systems Division at San Bernardino, fielding of the Atlas and Titan missiles has been completed for some time. Minuteman I missiles have been going into Strategic Air Command operational squadrons at more than one a day for almost two years. Minuteman II missiles have increased range for payload, improved accuracy, and they can be launched by radio from an airborne command post.

The Boeing Company has the contract for assembly and test of Minuteman II.

The combined FY 65 and FY 66 programs will exceed $1.25 billion.

Another major program at this division is an Advanced Ballistic Re-Entry System developmental program. . . .

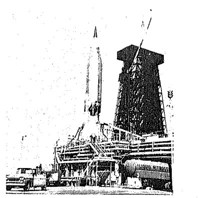
This program is running about level at $150 million each year and will continue.

At our Space Systems Division, the Titan III booster is in engineering development. Our work is continuing on the Manned Orbiting Laboratory payload, and the two projects together have been planned for almost half a billion dollars for FY 65 and 66 combined. . . .

Each year we receive well over 2,000 voluntary unsolicited proposals, ranging from programs involving basic research to production hardware proposals. Many come from small firms or even from individuals, and each proposal receives careful and extensive evaluation. . . .

In addition to the procurement actions to be completed by our product divisions in the organizations I have just described, the test centers will require continued updating of instrumentation and test facilities to insure complete evaluation of our new weapon systems as well as the refinement of systems in the operational stage.

Each organization — production division or center — offers almost unlimited opportunities to do business with the Air Force Systems Command. Each Systems Command buying activity maintains a mechanized source data file. . . .



Atop the Atlas 134 is mounted the ABRES (Advanced Ballistic Re-entry Systems) vehicle. ABRES was designed to record data to help R&D personnel develop more effective nose cones for all intercontinental ballistic missiles.

If you are uncertain as to where to go, please write directly to the Assistant for Small Business or Contractor Relations and Source Specialist, Air Force Systems Command, Andrews Air Force Base, Washington, D. C. 20331. . . .

Our hardware contracts include: (1) firm reliability requirements to insure high mean time between failure; (2) incentive provisions to insure required performance; (3) value engineering to eliminate gold plating, and many other arrangements which serve to foster the best possible end-item considering cost, maintenance, performance and reliability. We are in a very competitive environment, but I think that I have shown that opportunities do exist. The initiative is up to you.

Air Force Logistics Command

Maj. Gen. L. W. Fulton, USAF
Director
Procurement & Production
Air Force Logistics Command

. . . In order to perform our primary mission — keeping Air Force weapons and support systems in a "GO" status — Air Force Logistics Command (AFLC) is spending $2.2 billion for procurements from industry in FY 65, and in FY 66 our planning budget is for just about the same amount.

With these dollars we buy (1) initial spare parts for aircraft and missiles; (2) replenishment spare parts for aircraft and missiles; (3) missile propellants; (4) electronic systems spare parts; (5) end items such as aerospace ground equipment and special purpose vehicles; (6) aircraft, missile and other modification programs; (7) contract maintenance and (8) services. . . .

The Air Force has a strong Base Self Sufficiency Program under which commercial type services, supplies, equipment and material are bought by the individual base. Each year the more than 150 Air Force Bases in the Zone of Interior spend approximately $1 billion on local or base procurements. About one fourth of this amount is spent by AFLC's base procurement offices. The locations of these base procurement offices are given in the Air Force pamphlet "Small Business and the Air Force." This pamphlet — Air Force Pamphlet 70-1-4 — is a handy document to have.

It is our policy to place our procurements with responsible contractors who will produce quality items on schedule, at the lowest sound price.

The Logistics Command is continually endeavoring to improve our operations by becoming more efficient and responsive. In order for us to make these improvements we need the cooperation and the help of industry. Therefore, I will spend just a few minutes outlining things which we in the Logistics Command believe that industry can and will do to help us improve the support of the Air Force systems. . . .

Logistics Considerations in Design.

It has long been acknowledged that, even though a new, advanced weapon system may be technically feasible, such a system creates more operational problems than it is worth if the design does not provide adequate maintainability, reliability and supportability.

Potential prime contractors are now expected and required to spend considerable time and effort to make those hard but important decisions during the early stages of programs which will enhance maintainability and reliability. Working with the Systems Command, our command is insuring that logistics considerations are included during the conceptual and definition phases on new programs. . . .

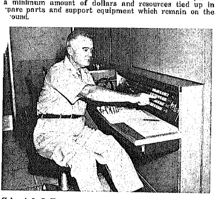
We want to see maintainability, reliability, quality and value engineering designed into new systems at the start, rather than injecting them by expensive and duplicative effort after the system is in production and operation. The selection of components with proven reliability for use in new systems is but one example of the things industry can do which will produce maintainability and reliability benefits when the system goes operational.

Planning for Standardization and Ultimate Cost.

The Air Force, in the past few years has been able to bring about a declining trend in the total number of items in our inventory. We have learned that annual competitive procurements of components based on performance type specifications result in multiple suppliers, additional requirements for aerospace ground equipment and test equipment and, more important, in large increases in the numbers of "bit and piece" spare parts in our inventory. This actually increases the Air Force's cost of operation.

The Logistics Command, with the full cooperation of the Systems Command, has adopted the procedure of evaluating proposals for accessories and complex components on an ultimate cost basis. In evaluating proposals for new items which perform a similar or identical function to an item already in the inventory, we give consideration to formerly "hidden costs." We determine the need for and the cost of additional aerospace ground equipment, overhaul and maintenance shop equipment, technical data and manuals, training of personnel and the cost associated with introducing new spare "bit and piece" items into our inventory. These hidden costs are added to item prices to determine the real or ultimate cost. When ultimate cost evaluation is to be used, we include specific requirements in the Request for Proposals which insures a fair and impartial evaluation and contractor selection.

This program will pay off in large benefits because it will help foster standardization and will improve our capability of keeping the Air Force in a "GO" status, with a minimum amount of dollars and resources tied up in spare parts and support equipment which remain on the ground.



Colonel J. J. Treacy, AFLC's Deputy Director of Procurement and Production, tries out the console of a 301 computer. This is the type computer used for the Command's standard mechanized bidders' list system.

Competition with Confidence.

The Air Force Logistics Command has a buying policy which emphasizes "competition when it makes sense." We have implemented the DOD High Dollar Spare Parts Breakout Program under our "Competition with Confidence" concept. The basic premise of this concept is that the operational integrity of a system shall not be compromised.

"Competition with Confidence" is an Air Force-industry cooperative venture in which the prime contractor who has the most intimate knowledge of the system and its components recommends to the Air Force the procurement category of spare part items. . . .

The prime contractor also identifies other items of a critical nature which he himself does not produce, but which can safely be bought from the prime contractor's qualified source or sources without jeopardizing the integrity of the system in operation. . . .

Lastly, the contractor designates those critical items which he produces or on which he himself performs vital inspection or test procedures, or which require specific prime contractor management and surveillance efforts. . . .

The Air Force then reviews the contractor's recommended coding along with his justification and finally establishes the procurement method code. . . .

Mechanized Bidders' List.

I feel that many industry representatives will be interested in a new program we are presently implementing in AFLC Air Materiel Areas (AMA) because it involves you. As you know, any effective buying organization must maintain an up-to-date bidders' list or source file. In the past each of our AMA's maintained a bidders' list; however, there was little similarity in the details of information available and the responsiveness to the buyers' needs among the various systems used.

Our new standard mechanized bidders' list system is being placed into operation and should be in full swing by April 1965 at all AFLC AMA's except Rome. Rome, which is due to phase out, will not participate in this program. Each of our AMA's will use the 301 computer for the mechanized bidders' list. It provides a rapid response to an individual buyer's requirements for a list of potential sources for a specific commodity, item or service. In order to develop and implement this new system, we found it necessary to standardize the individual AMA commodity list booklets. This will correct the wide disparity in the commodity coding systems formerly used by the different AMA's. Under the standardized program a four digit code is used by all AMA's.

All AMA's, except Rome, have issued new commodity list booklets. Your companies have or will be submitting a new revised Bidders' Mailing List Application (Standard Form 129) and Commodity List Data (AFPI Form 24). Instructions for accomplishing the forms are contained in the booklets. If you haven't received your new Commodity List Booklets, you can obtain copies by direct contact with the AMA's or through the nearest Contract Management District (CMD).

Careful selection of items is essential to insure that your firm is properly listed. Indiscriminate selection of items or services should be avoided in order to preclude the listing of your firm for items which you cannot furnish. We recognize that an individual commodity in the lists, such as "gasket," may cover a broad spectrum of items.

Also, giving recognition to technological advances in materials and manufacturing processes, we included a new section in the commodity lists to cover manufacturing processes. In addition to identifying commodities you can furnish, you will also list manufacturing processes and methods in which you are proficient. . . . This information will be helpful to buyers in identifying potential sources when it is known that unusual or specialized manufacturing processes are involved. . . .

AFSC Scientific and Technical Liaison Offices (STLO)

GEOGRAPHIC AREA

AFSC STLO (RTSAA)
c/o The Boeing Co.
Seattle, Wash. 98124
Phone: (Area Code 206)
656-5744

AFSC STLO (RTSAB)
Waltham Federal Center
424 Trapelo Road
Waltham, Mass. 02153
Phone: (Area Code 617)
894-2400, Ext. 331/332

AFSC STLO (RTSAC)
O'Hare International Airport
PO Box 8758
Chicago, Ill. 60666
Phone: (Area Code 312)
CYpress 6-4411, Ext. 307

AFSC STLO (RTSAO)
500 Ervay St.
Dallas, Tex. 75201
Phone: (Area Code 214)
RIverside 9-2025

AFSC STLO (RTSAE)
113 St. Clair Ave., N.E.
Cleveland, Ohio 44114
Phone: (Area Code 216)
CHerry 1-7900, Ext. 7133/7134

AFSC STLO (RTSAL)
AF Unit Post Office
Los Angeles, Calif. 90045
Phone: (Area Code 213)
643-3805, Ext. 32985/33805

AFSC STLO (RTSAN)
111 East 16th St.
New York, N. Y. 10003
Phone: (Area Code 212)
SPring 7-4200, Ext. 775/778

AFSC STLO (RTSAO)
225 Jarvis St.
Toronto, Ontario, Canada
Phone: (Area Code 416)
EMpire 2-6211, Ext. 2465

AFSC STLO (RTSAS)
International Science Center
452 DeGuigne
Sunnyvale, Calif. 94035
Phone: (Area Code 408)
245-9535/9536

AFSC STLO (RTSAW)
c/o Department of the Navy
Washington, D. C. 20360
Phone: (Area Code 202)
OXford 6-3594/6-2471

AFSC STLO (RTSUM)
Massachusetts Institute of Technology
68 Albany St.
Cambridge, Mass. 02139
Phone: (Area Code 617)
UNIversity 4-6000, Ext. 3509

ARMY

AFSC STLO (RTSRA)
Aberdeen Proving Ground
Bldg. No. 314
Aberdeen Proving Ground, Md. 21005
Phone: (Area Code 301)
272-4000, Ext. 3494

AFSC STLO (RTSRE)
Bldg. No. 5101
Edgewood Arsenal, Md. 21010
Phone: (Area Code 301)
676-1000, Ext. 26259/23249

AFSC STLO (RTSRF)
U. S. Army Electronics R&D Lab
Fort Monmouth, N. J. 07703
Phone: (Area Code 201)
535-1309, Ext. 4478

AFSC STLO (RTSRZ)
U. S. Army Tropic Test Center
PO Drawer 942,
APO, New York, N. Y. 09827

NAVY

AFSC STLO (RTSNO)
U. S. Naval Air Development Center
Johnsville, Westminster, Penn. 18974
Phone: (Area Code 215)
OSborne 5-7000, Ext. 431

AFSC STLO (RTSNM)
Naval Missile Center
Point Mugu, Calif. 93041
Phone: (Area Code 805)
488-3511, Ext. 8012/8236

AFSC STLO (RTSNR)
Naval Research Laboratory
Washington, D. C. 20390
Phone: (Area Code 202)
JOhnson 3-6600, Ext. 2266

AFSC STLO (RTSNT)
Naval Ordnance Test Station
China Lake, Calif. 93556
Phone: (Area Code 805)
FRontier 7-7411, Ext. 71408

NASA

AFSC STLO (RTSSA)
Ames Research Center (NASA)
Moffett Field, Calif. 04035
Phone: (Area Code 415)
YOrkshire 7-3056

AFSC STLO (RTSSL)
Langley Research Center (NASA)
Langley Air Force Base, Va. 23365
Phone: (Area Code 703)
764-2044/764-4426

AFSC STLO (RTSSM)
NASA Manned Spacecraft Center
Houston, Tex. 77017
Phone: (Area Code 713)
HUnter 3-2126

AFSC STLO (RTSSW)
Lewis Research Center (NASA)
21000 Brookpark Road
Cleveland, Ohio 44135
Phone: (Area Code 216)
267-2011

EDITOR'S NOTE

Due to the large number of end of the fiscal year contract awards and other items of interest to industry, the Bibliography Section of the *Defense Industry Bulletin* has been withheld for this month only.

Emphasis Placed Upon Security Classification Guidance for Industry

DOD Instruction 5210.47, Security Classification of Official Information, Dec. 31, 1964, requires that a classification guide, based upon classification determinations made by the original classifying authority, shall be issued for each program and project, and that successive operating echelons shall prescribe such further detailed guidance as may be necessary.

Each defense contract involving classified information is supported by a DD Form 254, Security Requirements Check List. Research and analysis by the DOD Directorate for Classification Management is under way to determine the proper inter-relationship for purposes of classification guidance between any particular contract supported by a DD Form 254 and the broader program or project of which that contract is only a single part. A correct determination of this relationship should result in more consistent and uniform classification guidance for industry and in overall operating economies and cost reductions which can be realized through good classification management practices.

Approved Map and Plan Security Cabinets Available to Contractors

Approved map and plan security cabinets are now on the Federal Supply schedule and available to all authorized contractors who have requirements to store classified Defense information.

There are two types of cabinets available. The first is identified as a Class Five cabinet and affords protection for:

30 man-minutes against surreptitious entry.
20 man-hours against manipulation of the lock.
20 man-hours against radiological attack.

There is no forced entry requirement. The other is identified as a Class Six cabinet and affords protection for:

30 man-minutes against surreptitious entry.
20 man-hours against manipulation of the lock.
20 man-hours against radiological attack.
10 man-minutes against forced entry.

Both of these cabinets have been tested and approved under tests defined in Interim Federal Specifications AA F-00363 (GSA-FSS) and represent an important advance in security protection for classified plans and bulk material.

Industrial Civil Defense Management Course Offered

A new course in Industrial Civil Defense Management has been added to the curriculum of the three Office of Civil Defense (OCD) training schools for FY 66.

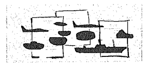
The new course is being given to refine the professional management capabilities of business and industry leaders for meeting industrial civil defense responsibilities.

Although the course is primarily designed for industrial and business civil defense coordinators, it is also open to professional civil defense personnel in Federal, State and local government.

Registration dates for the course have been set for September 12, 1965, February 27 and April 24, 1966.

Subjects to be covered include industrial preparation for civil defense, shelter engineering problems, planning and organization for survival in industrial facilities and restoration of production and distribution following attack. Other areas to be included are shelter management, industrial mutual aid for civil defense management and educating employees for civil defense.

The course will be offered at the OCD Staff College, Battle Creek, Mich.; OCD Eastern Training Center, Brooklyn, N. Y.; and the OCD Western Training Center, Alameda, Calif.



DEFENSE PROCUREMENT

DEFENSE SUPPLY AGENCY

4—**Gulf Oil Corp.**, Houston, Tex. $4,738,946. 22,000,000 gallons of motor gasoline and 15,000,000 gallons of burner fuel. Defense Fuel Supply Center, Washington, D.C.

7—**Cities Service Oil Co.**, New York, N.Y. $1,141,670. 13,430,000 gallons of JP-5 jet fuel. New York, N.Y. Defense Fuel Supply Center, Washington D.C.

9—**B. G. Colton Co.**, New York, N.Y. $1,256,250. 2,085,710 yards of cotton sateen cloth. Monroe, Ga., Batesberg, S.C., and Columbus, Ga. Defense Clothing and Textile Supply Center, Philadelphia, Pa.

11—**Borg-Warner Corp.**, Chicago, Ill., $1,333,649. 404,106 steel helmets. Chicago. Defense Clothing and Textile Supply Center, Philadelphia, Pa.

15—**Shell Oil Co.**, New York, N.Y. $1,394,902. Aviation fuel and lubricants and refueling and defueling services at commercial airports. Defense Fuel Supply Center, Washington, D.C.

17—**Nantex Riviera Corp.**, New York, N.Y. $1,326,580. Cotton underwear. Greenwood, S.C. Defense Clothing and textile Supply Center, Philadelphia, Pa.

18—**Oscar Mayer and Co.**, Madison, Wis. $1,040,760. 2,589,600 cans of cooked ham. Defense Subsistence Supply Center, Chicago, Ill.

21—**Supreme Mfg. Co.**, Dallas, N.C. $1,157,725. 2,500,000 men's cotton undershirts. Dallas. Defense Clothing and Textile Supply Center, Philadelphia, Pa.

24—**Evan Jones Coal Co.**, Anchorage, Alaska. $2,273,468. 245,515 tons of coal. Defense Fuel Supply Center, Washington, D.C.

28—**Shell Oil Co.**, New York, N.Y. $1,768,437. Gasoline and fuel oil. Defense Fuel Supply Center, Washington, D.C.

—**Socony Mobil Oil Co. Inc.**, New York, N.Y. $1,125,123. Gasoline and fuel oil. Defense Fuel Supply Center, Washington, D.C.

—**W. R. Grace and Co.**, Fords, N.J. $1,340,338. Aircraft engine lubricating oil. Defense Fuel Supply Center, Washington, D.C.

—**American Oil and Supply Co.**, Newark, N.J. $1,300,694. 932,760 quarts of aircraft engine lubricating oil. Defense Fuel Supply Center, Washington, D.C.

29—**J. P. Stevens Co.**, New York, N.Y. $1,269,609. 1,700,000 yards of cloth. Great Falls and Wallace, S.C. Defense Clothing and Textile Supply Center, Philadelphia, Pa.

—**Burlington Industries, Inc.**, New York, N.Y. $1,953,111. 2,478,000 yards of wind resistant cotton cloth. Cramerton, N.C. Defense Clothing and Textile Supply Center, Philadelphia, Pa.

30—**Riegel Textile Corp.**, New York, N.Y. $1,441,760. 3,000,000 yards of cotton sateen cloth. Scottdale and Trion, Ga. Defense Clothing and Textile Supply Center, Philadelphia, Pa.

—**Tumpane Co., Inc.**, Terre Haute, Ind. $1,529,859. Supplies and services for operation and maintenance of the Defense Industrial Plant Equipment Facility, Terre Haute, Ind. from July 1, 1965 to June 30, 1966. Defense Industrial Plant Equipment Center, Memphis, Tenn.

—**Standard Oil Co. of Calif.**, San Francisco, Calif. $2,319,678. Gasoline, automotive diesel fuel, solvent and fuel oil. Defense Fuel Supply Center, Washington, D.C.

CONTRACT INDEX

Contract information is listed in the following sequence: Date — Company — Dollar Value — Material — Location Work Performed — Contracting Agency

ARMY

1—**MacGregor Triangle Co.**, Boise, Idaho. $3,643,879. Work on John Day Lock and Dam Project. Klickitat County, Wash. District Corps of Engineers, Walla Walla, Wash.

—**Construction Ltd.**, Bordentown, N.J. $1,324,598. Construction of a 70-bed air evacuation receiving facility and expansion of clinical areas at Walson Army Hospital. Fort Dix, N.J. District Corps of Engineers, New York, N.Y.

—**Chrysler Corp.**, Centerline, Mich. $1,270,952. Production engineering services related to M-60 series tank. Centerline. Army Tank Automotive Center (AMC), Warren, Mich.

—**Aircraft Armaments, Inc.**, Cockeysville, Md. $1,886,000. Research and development of special purpose individual weapons system. Cockeysville. Army Weapons Command (AMC), Rock Island, Ill.

2—**Patton-Tulley Transportation Co.**, Memphis, Tenn. and **Pensacola Construction Co.**, Kansas City, Mo. $1,363,110. Work on the Mississippi River and Tributaries, Revetment and Bank Projection Project. Friarpoint, Miss. and Densford, Tenn. Engineer District, Memphis, Tenn.

3—**Bell Helicopter Co.**, Hurst, Tex. $1,451,393. Helicopters. Hurst. Aviation Command (AMC), St. Louis, Mo.

4—**Potashnick Construction Co., Inc.**, Cape Girardeau, Mo. $10,476,783. Construction of a dam and dike at the DeGray Reservoir Project. Arkadelphia, Ark. Engineer District, Vicksburg, Miss.

—**Perini Brothers**, Framingham, Mass. $23,266,207. Work on the Uniontown, Ky., Lock and Dam Project. Engineer District, Louisville, Ky.

—**JV-H. C. Smith Construction Co.**, and **M. M. Sundt**, Compton, Calif. $1,082,770. Modification of Pads 1 and 3 at the ABRES complex, Vandenberg AFB, Calif. Engineer District, Los Angeles, Calif.

7—**Eagle Engineering Corp.**, Louisville, Ky. $1,394,828. 2,102 generator sets. Louisville. Engineer Procurement Office (AMC), Chicago, Ill.

8—**Sentinel Electronics, Inc.**, Philadelphia, Penn. $1,004,505. Radio sets for use in Army vehicles. Hazeltown, Pa. Electronics Command (AMC), Philadelphia, Pa.

—**General Electric Co.**, Syracuse, N.Y. $2,012,000. Design and development of a portable chemical agent alarm. Pittsfield, Mass.; Owensboro, Ky; Syracuse and Schenectady, N.Y. Edgewood Arsenal (AMC), Md.

—**Allied-Webb**, South Gate, Calif. $1,713,880. Modification to Pad 3 (Point Arguello Launch Complex) for TITAN III. Vandenberg AFB, Calif. Engineer District, Los Angeles, Calif.

—**Baldwin, Lima, Hamilton Corp.**, Philadelphia, Pa. $1,220,462. 13 turbine governors for the John Day, Little Goose and Lower Granite Locks and Dams. Eddystone, Pa. District Corps of Engineers, Philadelphia, Pa.

—**Deep South Construction, Inc.**, Montgomery, Ala. $4,519,827. Construction work at Larson Field, Fort Benning, Ga. District Corps of Engineers, Savannah, Ga.

—**General Motors Corp.**, Detroit, Mich. $1,069,750. Design, development, fabrication and test of an engine for the US/FRG (Federal Republic of Germany) Main Battle Tank. Detroit. Army Tank Automotive Center (AMC), Warren, Mich.

9—**Bogue Electric Mfg. Co.**, Paterson, N.J. $3,902,400.

976 generator sets. Paterson. Engineer Procurement Office (AMC), Chicago, Ill.

10—**Martha-Mac Corp.**, Memphis, Tenn. $1,726,405. Work on Mississippi River at Ashbrook-Miller Bend, Ark., and Mississippi Project. Near Greenville, Miss. District Corps of Engineers, Vicksburg, Miss.

11—**American Electronic Laboratories**, Inc., Colmar, Pa. $4,520,000. Electronic equipment. Colmar. Army Electronics Command (AMC), Fort Monmouth, N.J.

—**Kaiser Jeep Corp.**, Toledo, Ohio. $1,195,979. 693 Utility trucks. Toledo. Army Tank Automotive Center (AMC), Warren, Mich.

—**Mason Laboratories Division, Hallicrafters Corp.**, Wilton, Conn. $2,539,668. 200 radio sets (AN/GRC-26) and 120 radio transmitters (T-368/URT). Wilton. Electronics Command (AMC), Philadelphia, Pa.,

—**Hughes Aircraft Co.**, Culver City, Calif. $1,102,226. Research and development on TOW missile system. Tucson, Ariz. Los Angeles Procurement District (AMC), Pasadena, Calif.

—**Scovill Mfg. Co.**, Waterbury, Conn. $1,916,250. Ordnance items. Waterbury, Conn. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

14—**Otis Elevator Co.**, Brooklyn, N.Y. $2,288,619. Image interpretation equipment (AN/TSQ-43). Brooklyn. Electronics Command (AMC), Philadelphia, Pa.

—**Collins Radio Corp.**, Dallas, Tex. $4,229,666. Designing, furnishing and installing of operational intercom system for launch complex No. 39. Merritt Island, Fla. Canaveral Engineer District, Merritt Island, Fla.

15—**Raytheon Co.**, Burlington, Mass. $3,842,246. Air transportable radio communications (AN/TSC-38) equipment. Hawthorne, Calif. Electronics Command (AMC), Philadelphia, Pa.

—**Harrice and Brooks, Inc.**, Riverdale, Md. $1,499,679. Work on the Chesapeake and Delaware Canal Project. Near Chesapeake City, Md. Engineer District, Philadelphia, Pa.

—**Vinnell-Mannix-Fuller-Dillingham**, Alhambra, Calif. $71,956,573. Work on Little Goose Lock and Dam, Snake River, Project. Columbia and Whitman Counties, Wash. Engineer District, Walla Walla, Wash.

—**Mincom Division of Minnesota Mining and Mfg. Co.**, Camarillo, Calif. $1,500,000. Production of classified electronics equipment. Camarillo. Electronics Command (AMC), Fort Monmouth, N.J.

—**Pacific Dredging Co.**, Paramount, Calif. $1,221,648. Dredging and disposal work on Vancouver, Wash., Project. Paramount. District Corps of Engineers, Portland, Ore.

—**Perini Corp., Morrison Knudson Co., Inc., and C. H. Leavell Co.**, Framingham, Mass. $25,276,269. Work on Arkansas River and Tributaries, Robert S. Kerr Lock and Dam Project. Le Flore and Sequoyah Counties, Okla. District Corps of Engineers, Tulsa, Okla.

16—**Ling-Temco-Vought, Inc.**, Warren, Mich. $3,493,107. Advanced production engineering program for (XM561) 1¼ ton cargo trucks. Warren. Michigan Army Missile Plant (AMC), Warren, Mich.

—**I. D. Precision Components Corp.**, Jamaica, N.Y. $2,900,028. Ordnance items. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Caterpillar Tractor Co.**, Peoria, Ill. $1,318,637. 47 tractors. Peoria. Engineer Procurement Office (AMC), Chicago, Ill.

17—**R. F. Ball Construction Co., Inc.**, San Antonio, Tex. $2,077,000. 300 permanent bachelor officer quarters. Fort Sill, Okla. Engineer District, Albuquerque, N.M.

—**Grumman Aircraft Engineering Corp.**, Bethpage, L.I., N.Y. $1,758,833. Modification of OV-1B and OV-1C MOHAWK aircraft. Bethpage. Army Aviation Materiel Command (AMC), St. Louis, Mo.

18—**Bermite Powder Co.**, Saugus, Calif. $1,497,600. Photoflash cartridges. Saugus. Los Angeles Procurement District (AMC), Pasadena, Calif.

—**Fred Dietz Plumbing Co.**, Chicago, Ill. $1,044,530. Construction of a heating plant and installation of steam distribution lines. Fort Sheridan, Ill. Engineer District, Chicago.

—**FMC Corp.**, San Jose, Calif. $6,582,851. M113A1 armored personnel carriers. Charleston, W. Va. Army Tank Automotive Center (AMC), Warren, Mich.

—**Dyson & Co.**, Pensacola, Fla. $2,429,010. Construction of a three story medical facility with related utilities and a service and parking area. Tyndall AFB, Fla. Engineer District, Mobile, Ala.

—**Model Engineering & Mfg. Corp.**, Huntington, Ind. $6,106,177. Radio sets (AN-PRC-25) and receiver transmitters (RT505). Huntington and Salt Lake City, Utah. Procurement Dist. (AMC), Chicago, Ill.

—**Chamberlain Corp.**, Waterloo, Iowa. $1,014,000. Ordnance items. Waterloo. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

21—**Silas Mason & Co., Inc.**, New York, N.Y. $1,457,255. Classified ammunition. Burlington, Iowa. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Remington Arms Co., Inc.**, Bridgeport, Conn. $9,562,865. Miscellaneous small arms ammunition. Independence, Mo. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Texas Instruments, Inc.**, Dallas, Tex. $4,500,000. Classified electronic equipment. Dallas. Electronics Command (AMC), Fort Monmouth, N.J.

—**Collins Radio Co.**, Cedar Rapids, Iowa. $1,542,488. Automatic direction finder sets (AN/ARN-83). Cedar Rapids. Electronic Command (AMC), Philadelphia, Pa.

—**Collins Radio Co.**, Cedar Rapids, Iowa. $1,539,965. Radio receiving sets (AN/ARN-82)(M). Cedar Rapids. Electronics Command (AMC), Philadelphia, Pa.

—**Remington Arms Corp.**, Bridgeport, Conn. $1,393,200. 45 caliber cartridges. Bridgeport. Frankford Arsenal (AMC), Philadelphia, Pa.

22—**E. L. Schofield, Inc.**, Rockford, Ill. $1,689,270. Heater kits for ¼-ton trucks. Rockford. Army Mobility Command (AMC), Warren, Mich.

—**Canadian Commercial Corp.**, Ottawa, Ont., Canada. $1,918,833. Doppler Navigation Radar components for MOHAWK aircraft. Montreal, Que. Electronics Command (AMC), Fort Monmouth, N.J.

—**Highway Products, Inc.**, Kent, Ohio. $1,778,907. Guided missile launchers. Kent. Army Missile Command (AMC), Huntsville, Ala.

—**Chrysler Corp.**, Warren, Mich. $1,310,346. Refurbishment, checkout and launch services of Redstone missiles and related ground support equipment. Warren. Army Missile Command (AMC), Huntsville, Ala.

23—**Gregg, Gibson & Gregg, Inc.**, Kissimmee, Fla. $1,471,823. Work on the Central and Southern Florida Flood Control Project. Kissimmee. District Corps of Engineers, Jacksonville, Fla.

24—**J. R. Francis General Contractors, Inc.**, El Paso, Tex. $2,383,272. Construction of range and instrumentation facilities at White Sands Missile Range, N.M. District Corps of Engineers, Albuquerque, N.M.

—**Eidal International, Inc.**, Albuquerque, N.M. $1,800,075. 210 trailer mounted laundries. Albuquerque. Army Mobility Equipment Center (AMC), St. Louis, Mo.

—**Stelman, Inc.**, Stamford, Conn. $1,031,637. Automatic Digital Network (AUTODIN). Stamford. Electronics Command (AMC), Philadelphia, Pa.

—**Penker Construction Co.**, Cincinnati, Ohio. $8,968,876. Construction and excavation work on the Deer Creek Reservoir Project, Pickaway County, Ohio. District Corps of Engineers, Huntington, W. Va.

—**La Pointe Industries, Inc.** Rockville, Conn. $1,821,327. Radio sets and ancillary items (AN/ARC-73). Rockville. Electronics Command (AMC), Fort Monmouth, N.J.

25—**Del E. Webb Corp.**, Phoenix, Ariz. $3,525,000. Construction of 110-bed hospital with dental clinic and out patient facilities. Fort Huachuca, Ariz. District Corps of Engineers, Los Angeles, Calif.

—**Hupp Corp.**, Canton, Ohio. $16,126,109. Multi-fuel engines for the 2½-ton truck. Canton. Army Mobility Command, (AMC), Warren, Mich.

—**Kaiser Jeep Corp.**, Toledo, Ohio. $57,700,708. M44 series 2½ ton trucks. Toledo. Army Mobility Command, (AMC), Warren, Mich.

—**General Dynamics Corp.**, Rochester, N.Y. $44,977,568. 1,017 digital subscriber terminal equipment and ancillary items for AUTODIN (Automatic Digital Network). Rochester. Electronics Command (AMC), Philadelphia, Pa.

—**Sperry Rand Corp.**, Washington, D.C. $1,320,000 Rental of data processing equipment. Utica, N.Y. Army Information and Data Systems, Office of the Chief of Staff.

—**Raytheon Co.**, Lexington, Mass. $17,865,016. Ground equipment and field maintenance equipment for HAWK missile system. Andover, Mass., Waltham, Mass. and Oxnard, Calif. Army Missile Command (AMC), Huntsville, Ala.

—**Raytheon Co.**, Lexington, Mass. $2,102,733. Engineering services for the HAWK missile system. Andover, Mass. Army Missile Command (AMC), Huntsville, Ala.

—**Southern Airways of Texas, Inc.**, Mineral Wells, Tex. $4,773,686. Training of helicopter pilots and maintenance of related aircraft. Fort Wolters, Tex. Purchasing and Contracting Office, Fort Wolters, Tex.

—**Day and Zimmermann, Inc.**, Philadelphia, Pa. $1,213,753. Miscellaneous conventional items, ammunition and components. Texarkana, Tex. Ammunition Procurement and Supply Agency, Joliet, Ill.

—**Remington Arms Co., Inc.**, Bridgeport, Conn. $6,956,648. Ordnance items. Bridgeport. Frankford Arsenal (AMC), Philadelphia, Pa.

28—**Magnavox Co.**, Urbana, Ill. $3,000,000. Classified electronic equipment. Urbana. Electronics Command (AMC), Fort Monmouth, N.J.

—**Hupp Corp.**, Canton, Ohio. $1,278,071. 2,316 engines. Canton. Army Mobility Equipment Center (AMC), St. Louis, Mo.

—**Olin Mathieson Chemical Corp.**, New York, N.Y. $4,351,877. Propellant charges, maintenance and support activities. Charlestown, Ind. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Chrysler Corp.**, Centerline, Mich. $1,667,599. Advanced production engineering services on the M60A1E1 selected turret program procurement. Centerline. Army Tank Automotive Center (AMC), Warren, Mich.

—**Heil Co.**, Milwaukee, Wis. $1,413,260. 12-ton semi-truck tanks (M131A4C). Milwaukee. Procurement District (AMC), Chicago, Ill.

—**Aaron Torch and Sons, Inc.**, Macon, Ga. $2,068,800. Construction of a composite medical facility at Robins AFB, Ga. District Corps of Engineers, Savannah, Ga.

—**International Harvester Co.**, Washington, D.C. $1,146-714. Various types of trucks and tractors. Fort Wayne, Ind.; Springfield, Ohio and Chattanooga, Tenn. Army Tank Automotive Center (AMC), Warren, Mich.

—**H. Halvorson, Inc.**, Spokane, Wash. $4,220,000. Construction of a composite medical facility at Vandenberg AFB, Calif. District Corps of Engineers, Los Angeles, Calif.

—**Ohio Tool and Mfg. Co., Inc.**, Toledo, Ohio. $1,018,784. Shoe assemblies for various combat vehicles. Toledo. Army Tank Automotive Center (AMC), Warren, Mich.

—**Firestone Tire and Rubber Co.**, Akron, Ohio. $5,246,690. Rubber track shoe assemblies (repair parts for the M60 tank). Noblesville, Ind. Army Tank Automotive Center (AMC), Warren, Mich.

—**Weatherhead Co.**, Cleveland, Ohio. $2,259,776. Projectiles. Cleveland. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

29—**M. I. T.**, Cambridge, Mass. $1,275,000. Research covering electronics physics, molecular physics and communication sciences. Cambridge. Electronics Command (AMC), Fort Monmouth, N.J.

—**Bell Helicopter Co.**, Hurst, Tex. $4,603,405. UH1B and UH1D helicopters. Hurst. Aviation Command (AMC), St. Louis, Mo.

—**Western Electric Co.**, New York, N.Y. $2,028,066. Modification of target track radar on Kwajalein Island. NIKE X Project Office (AMC), Huntsville, Ala.

—**Honeywell, Inc.**, St. Petersburg, Fla. $1,000,000. Classified electronics equipment. St. Petersburg. Electronics Command (AMC), Fort Monmouth, N.J.

—**Kaiser Jeep Corp.**, Toledo, Ohio. $1,384,957. 232 trucks with government furnished engines. South Bend, Ind. Army Mobility Command (AMC), Warren, Mich.

—**Tuckman-Barbee Construction Co., Inc.**, Washington, D.C. $1,432,000. Construction of a dispensary and general clinic at Fort Myer, Va. District Corps of Engineers, Norfolk, Va.

—**George A. Rutherford, Inc.**, Albuquerque, N.M. $1,883,800. Construction of technical training building. Sandia Base, N.M. District Corps of Engineers, Albuquerque, N.M.

—**Farrell Construction Co., Inc.**, Memphis, Tenn. $3,909,788. Construction and excavation work on Freshwater trict Corps of Engineers, New Orleans, La.
Bayou Navigation Project. Near Abbeville, La. Dis-

—**Bauer Dredging Co., Inc.**, Port Lavaca, Tex. $1,145,054. Work on the Sabine-Neches Waterway Project. Near Port Arthur, Tex. District Corps of Engineers, Galveston, Tex.

—**Sylvania Electronics Systems**, Waltham, Mass. $16,252,347. Design, fabrication and installation of new dual frequency designed ALTAIR. Waltham and Roi-Namur Island, Pacific. Army Missile Command (AMC), Huntsville, Ala.

—**U.S. Forgecraft Corp.**, Fort Smith, Ark. $1,588,040. 4.2 inch projectiles. Fort Smith. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Chrysler Motor Corp.**, Detroit, Mich. $6,234,778. 2,023 one-ton trucks and 75 one-ton ambulances. Warren, Mich. Army Mobility Command (AMC), Warren, Mich.

—**Bayfield Industries, Inc.**, Carrollton, Tex. $2,478,109. ½-ton utility trucks. Carrollton. Army Tank Automotive Center (AMC), Warren, Mich.

—**Loadcraft Inc.**, Augusta, Kan. $1,013,610. 162 semi-trailer vans. Augusta. Army Tank Automotive Center (AMC), Warren, Mich.

—**Johnson Furnace Co.**, Bellevue, Ohio. $1,759,458. 2,996 two-wheel trailer chassis. Bellevue. Army Tank Automotive Center (AMC), Warren, Mich.

—**Fontaine Truck Equipment Co.**, Birmingham, Ala. $2,348,700. 500 semi-trailers. Haleyville, Ala., and Collins, Miss. Army Tank Automotive Center (AMC), Warren, Mich.

—**Chrysler Corp.**, Centerline, Mich. $1,851,422. Engineering services for the M60 series tank; combat engineer vehicle; and armored vehicle launcher bridge. Centerline. Army Tank Automotive Center (AMC), Warren, Mich.

—**Ford Motor Co.**, Wixom, Mich. $6,876,026. 1,552 cargo trucks and chassis. Mahwah, N.J. Army Tank Automotive Center (AMC), Warren, Mich.

—**General Motors Corp.**, Indianapolis, Ind. $4,573,694. 188 transmissions and related spares for the XM551 vehicle. Indianapolis. Army Tank Automotive Center (AMC), Warren, Mich.

—**Consolidated Diesel Electric Corp.**, Stamford, Conn. $8,210,128. Ten-ton trucks. Schenectady, N.Y. Army Tank Automotive Center (AMC), Warren, Mich.

—**General Motors Corp.**, Indianapolis, Ind. $1,671,492. 331 rebuilt/retrofit transmissions for combat vehicles. Indianapolis. Army Tank Automotive Center (AMC), Warren, Mich.

—**Mack Truck Co., Inc.**, Montvale, N.J. $5,349,682. 649 axle sets with related items for the ten-ton truck. Allentown, Pa. Army Tank Automotive Center (AMC), Warren, Mich.

—**Electromagnetic Industries of Georgia**, Moultrie, Ga. $1,444,618. Semi-trailers. Moultrie. Electronics Command (AMC), Philadelphia, Pa.

—**Cummins Engine Co.**, Columbus, Ind. $3,437,898. 691 diesel engines and related items for the ten-ton truck. Columbus. Army Tank Automotive Center (AMC), Warren, Mich.

30—**Remington Arms Co., Inc.**, Bridgeport, Conn. $13,275,385. Miscellaneous ammunition. Independence, Mo. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Hughes Aircraft Co.**, Fullerton, Calif. $1,099,993. Fire Distribution Training Set (AN/TSQ–51). Fullerton. Los Angeles Procurement District (AMC), Pasadena, Calif.

—**Hughes Aircraft Co.**, Fullerton, Calif. $1,322,209. Spare parts for the Satellite Communication Terminal

(AN/NSC-46) Mark 1B. Fullerton. Electronics Command, Fort Monmouth, N.J.

—**Allis Chalmers Mfg., Co.**, Milwaukee, Wis. $1,925,000. 65 engine generator sets. Harvey, Ill. Engineer Research and Development Laboratories (AMC), Fort Belvoir, Va.

—**Astrodata Inc.**, Ahaheim, Calif. $3,557,721. Total range requirements for advance range testing reporting and control (ARTRAC). White Sands Missile Range, N.M. White Sands Missile Range (AMC), N.M.

—**Admiral Corp.**, Chicago, Ill. $2,489,839. 983 air-to ground radio communication sets (AN/ARC-54). Chicago. Electronics Command, Fort Monmouth, N.J.

—**Security Construction Co., Inc.**, Richmond, Va. $1,787,000. Construction of a pulse reactor test facility. Aberdeen Proving Grounds, Md. Engineer District, Baltimore, Md.

—**Monsanto Research Corp.**, St. Louis, Mo. $2,000,000. Research program on high performance composites. St. Louis. Defense Supply Service (AMC), Washington, D.C.

—**Western Electric Co.**, New York, N.Y. $1,364,000. Support of Missile Test Firing Program. White Sands Missile Range, N.M. Army Missile Command (AMC), Huntsville, Ala.

—**General Electric Co.**, Syracuse, N.Y. $8,135,430. Mobile acquisition radar (HIPAR). Syracuse. Army Missile Command (AMC), Huntsville, Ala.

—**L&A Construction Co.**, Hattiesburg, Miss. $3,049,925. Construction and excavation work on Yazoo Basin—Yazoo Backwater Project. Vicksburg, Miss. District Corps of Engineers, Vicksburg, Miss.

—**FMC Corp.**, New York, N.Y. $1,996,215. Classified items Newport, Ind. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Control Data Corp.**, Minneapolis, Minn. $1,560,000. Classified Electronic equipment. St. Paul, Minn. Electronics Command, Fort Monmouth, N.J.

—**Del Mar Engineering Laboratories, Inc.**, Los Angeles, Calif. $1,974,326. Automated target range. Los Angeles. Los Angeles Procurement District (AMC), Pasadena, Calif.

—**ITT Gilfillan, Inc.**, Los Angeles, Calif. $1,337,210. Radar sets and related components (AN/FPN-36). Azusa, Calif. Los Angeles Procurement District (AMC), Pasadena, Calif.

—**Southwest Truck Body Co., Inc.**, St Louis, Mo. $1,789,000. 75 truck-mounted shop equipment sets for organizational repair. West Plains, Mo. Army Mobility Equipment Center (AMC), St. Louis, Mo.

—**Blount Construction Co.**, Montgomery, Ala. $9,646,108. Construction and excavation work on Columbia Lock and Dam, Ouachita River Project. Columbia, La. District Corps of Engineers, Vicksburg, Miss.

—**S. J. Groves and Sons, Co.**, Minneapolis, Minn. $4,180,351. Excavation and construction work on Eau Galle Dam and Reservoir, Eau Galle River Project. Spring Valley, Wis. District Corps of Engineers, St. Paul, Minn.

—**Martin-Marrietta Corp.**, Denver, Colo. $1,000,000. Research and development services for the establishment of a center for the investigation of high enemy rate forming processes. Denver. Watertown Arsenal (AMC), Watertown, Mass.

—**J. Robert Bazley**, Pottsville, Pa. $2,055,489. Work on La Trobe Flood Protection Project. La Trobe, Pa. District Corps of Engineers, Pittsburgh, Pa.

—**C&C Construction Co.**, Fort Wayne, Ind. $1,011,878. Local protection project. Evansville, Ind. District Corps of Engineers, Louisville, Ky.

—**J. A. Jones Construction**, Charlotte, N.C. $36,884,771. Work on the Cannelton Lock and Dam, Ohio River Project. Cannelton, Ind. District Corps of Engineers, Louisville, Ky.

—**Greer Bros. and Young Co.**, London, Kv. $1,715,747. Work on East Lynn Reservoir, Twelve Pole Creek Project. Lane County, W. Va. District Corps of Engineers, Huntington, W. Va.

—**Westinghouse Electric Co.**, Baltimore, Md. $1,066,563. Three Doppler measurement kits and two digital ranging systems. White Sands Missile Range, N.M., and Baltimore. White Sands Missile Range (AMC), N.M.

—**Hercules Powder Co.**, Wilmington, Del. $1,187,663. Maintenance. Sunflower Army Ammunition Plant, Lawrence, Kan. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**General Dynamics Corp.**, Pomona, Calif. $1,594,081. REDEYE engineering services. Pomona. Los Angeles Procurement District (AMC), Pasadena, Calif.

—**Ford Motor Co.**, Dearborn, Mich. $12,279,507. ¼-ton utility trucks with government furnished engines. Highland Park, Mich. Army Mobility Command (AMC), Warren, Mich.

—**General United Corp., Inc.**, Topeka, Kan. $1,354,165. Liquid dispensing tank and pump units for truck mounting. Topeka. Army Mobility Equipment Center (AMC), St. Louis, Mo.

—**General Motors Corp.**, Indianapolis, Ind. $4,384,800. 168 transmission center sections for M488 recovery vehicles. Indianapolis. Army Tank Automotive Center (AMC), Warren, Mich.

—**Continental Motors Corp.**, Muskegon, Mich. $2,364,120. M151 utility truck enignes. Muskegon. Army Mobility Command (AMC), Warren, Mich.

—**Continental Motors Corp.**, Muskegon, Mich. $2,830,745. 150 M48A3 tank modification kits (diesel power package). Muskegon. Army Tank Automotive Center (AMC), Warren, Mich.

—**Amron Corp.**, Waukesha, Wis. $1,362,356. 20 mm cartridge cases. Waukesha. Frankford Arsenal (AMC), Philadelphia, Pa.

—**Universal Match Corp.**, St. Louis, Mo. $3,493,116. PERSHING missile erector launches. St. Louis. Army Missile Command (AMC), Huntsville, Ala.

—**Huntington Ordnance, Inc.**, Huntington, W. Va. $1,369,677. Signal kits for 24-volt electrical system trucks. Huntington. Army Tank Automotive Center (AMC), Warren, Mich.

—**RCA**, Burlington, Mass. $1,030,100. Product improvement of maintenance automatic test equipment. Tobyhanna Depot, Pa. and Burlington, Mass. Electronics Command (AMC), Fort Monmouth, N.J.

—**Wexler Construction Co., Inc.**, Newton Highlands, Mass. $2,762,800. Construction of environmental hygiene agency building. Edgewood Arsenal, Md. Engineer District, Baltimore, Md.

—**Allis Chalmers Mfg. Co.**, Milwaukee, Wis. $1,254,874. 38 full-tracked tractors for the Air Force. Springfield, Ill. Army Mobility Equipment Center (AMC), St. Louis, Mo.

—**Mack Trucks, Inc.**, Montvale, N.J. $1,328,077. 10-ton tractor truck (M123A1C) transmission assemblies. Hagerstown, Md. Army Tank Automotive Center (AMC), Warren, Mich.

—**Page Aircraft Maintenance, Inc.**, Lawton, Okla. $2,029,625. Maintenance on fixed and rotary wing aircraft. Cairns Army Airfield, Fort Rucker, Ala. Aberdeen Proving Ground (AMC), Aberdeen, Md.

—**Stamford Research Institute**, Menlo Park, Calif. $2,794,297. Design, collection, reduction and evaluation of data for Combat Development Command Experimental Center. Fort Ord and Hunter Liggett Military Reservation, Calif. San Francisco Procurement District (AMC), Oakland, Calif.

—**Isaacson Iron Works**, Seattle, Wash. $1,352,051. Components for fixed bridge, Line of Communication Highway. Seattle. Army Mobility Equipment Center, St. Louis, Mo.

—**Caterpillar Tractor Co.**, Peoria, Ill. $1,068,288. Air-droppable, full-tracked tractors. Peoria. Army Mobility Equipment Center (AMC), St. Louis, Mo.

—**Oshkosh Motor Truck, Inc.**, Oshkosh, Wis. $1,662,108. 77 truck-mounted snow removal units. Oshkosh. Army Mobility Equipment Center (AMC), St. Louis, Mo.

—**RCA**, Camden, N.J. $1,500,000. Classified electronic equipment. Camden. Electronics Command, Fort Monmouth, N.J.

—**Boeing Co.**, Morton, Pa. $1,438,920. CH–47 aircraft rotor blade transmissions. Morton. Army Aviation Command (AMC), St. Louis, Mo.

—Boeing Co., Morton, Pa. $1,055,043. CH-47 CHINOOK cargo helicopter transmission assemblies. Morton. Army Aviation Command (AMC), St. Louis, Mo.

—Hanson Machinery Co., Tiffin, Ohio. $1,208,952. 2-ton truck mounted cranes with booms. Tiffin. Army Mobility Equipment Center (AMC), St. Louis, Mo.

—Chamberlain Corp., Waterloo, Iowa. $1,609,740. Ordnance items. Waterloo. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—A. J. Kellos Construction Co., Augusta, Ga. $1,244,240. Construction of a 160-man bachelor officer's quarters with utilities. Fort Gordon, Ga. District Corps of Engineers, Savannah, Ga.

—Mike Bradford Co., Inc., Miami, Fla. $1,648,888. Construction of a 50-bed hospital with dental clinic. Moody AFB, Ga. Engineer District, Savannah, Ga.

—Continental Motors Corp., Detroit, Mich. $1,270,355. Overhaul, disassembly and reassembly of 2,259 government furnished engine assemblies for 2½ and 5-ton trucks. St. Thomas, Ont., Canada. Army Tank Automotive Center (AMC), Warren, Mich.

—AiResearch Mfg. Co., Los Angeles, Calif. $3,313,000. 82 gas turbine generator sets. Los Angeles and Phoenix, Ariz. Army Mobility Equipment Center (AMC), St. Louis, Mo.

—Dynalecton Corp., Washington, D.C. $2,996,760. Basic data collection equipment. White Sands Missile Range, N.M.; Holloman AFB, N.M. and Green River Test Complex, Utah. White Sands Missile Range (AMC), New Mexico.

NAVY

1—Bendix Corp., Baltimore, Md. $1,416,114. Navy Aircraft Communication Systems. Baltimore. Bureau of Weapons.

2—General Dynamics Corp., Groton, Conn. $55,694,515. Design and construction of two replenishment fleet oilers. Quincy, Mass. Bureau of Ships.

—Motorola, Inc., Scottsdale, Ariz. $3,179,975. SIDEWINDER missile guidance and control systems. Scottsdale. Bureau of Weapons.

3—Litton Systems, Inc., Beverly Hills, Calif. $2,778,255. E-2A aircraft computer spare parts. Van Nuys, Calif. Navy Aviation Supply Office, Philadelphia Pa.

—Litton Systems, Inc., Beverly Hills, Calif. $5,603,285. Navigation system components for A-6A and E-2A aircraft. Woodland Hills, Calif. Navy Aviation Supply Office, Philadelphia, Pa.

4—Iannuccilo Construction Co., Providence, R.I. $1,422,300. Construction of the operations training building at Fleet Training Center, Newport, R.I. Director, Northeast Division, Bureau of Yards and Docks.

7—U.S. Steel Corp., Pittsburgh, Penn. $9,288,644. 250-pound empty bomb bodies. McKeesport, Penn. Navy Ship Parts Control Center, Mechanicsburg, Pa.

—American Mfg. Co. of Texas, Fort Worth, Tex. $7,780,852. 500-pound empty bomb bodies. Fort Worth. Navy Ship Parts Center, Mechanicsburg, Pa.

9—Western Electric Co., New York, N.Y. $2,596,000. Oceanographic research equipment. Hillside, N.J. Navy Purchasing Office, Washington, D.C.

—Texas Instrument Inc., Dallas, Tex. $1,165,116. Spare parts for airborne indicator groups used in the S2E aircraft. Dallas. Navy Aviation Supply Office, Philadelphia, Pa.

—Vanguard Construction Corp., Norfolk, Va. $2,135,397. Installation of a salvage fuel boiler plant at Norfolk Naval Station. Director, Atlantic Div. Bureau of Yards and Docks.

10—Newport News Shipbuilding and Dry Dock Co., Newport News, Va. $73,100,000. Construction of four Attack Cargo Ships (AKA). Newport News. Bureau of Ships.

11—Bayfield Industries Inc., Carrollton, Tex. $1,585,250. SNAKE EYE bomb fins. Carrollton. Naval Ordnance Plant, Louisville, Ky.

—Humphreys and Harding, Inc., Washington, D.C. $3,226,500. Construction of a structural mechanics laboratory at the David W. Taylor Model Basin. Carderock, Md. Director, Chesapeake Div. Bureau of Yards and Docks.

—North American Aviation, Inc., Rocketdyne Div., Canoga Park, Calif. $2,707,029. Long lead time items for rocket motors for SHRIKE and SPARROW missiles. McGregor, Tex. Bureau of Weapons.

—General Precision Inc., Binghampton, N.Y. $1,973,268. One Prototype and four production basic instrument flight trainers. Binghampton. Naval Training Device Center, Port Washington, N.Y.

14—Douglas Aircraft Co., Inc., Long Beach, Calif. $7,481,000. TA-4E aircraft. Long Beach. Bureau of Weapons.

—Reynolds Metal Co., Phoenix, Ariz. $1,054,930. 2.75 rocket components. Phoenix. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—Muncie Gear Works, Muncie, Ind. $2,771,400. 2.75 rocket components. Muncie. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—Huyck Systems Co., Huntington Station, N.Y. $1,513,836. Position keeping computers for MK 114 fire control system. Huntington Station. Navy Purchasing Office, Washington, D.C.

—Goodyear Aerospace Corp., Akron, Ohio. $1,240,990. Three radar scope interpretation trainers. Akron. Naval Training Device Center, Port Washington, N.Y.

16—Westinghouse Electric Corp., Pittsburgh, Pa. $6,348,644. Design and furnishing of reactor plant components for nuclear powered ships. Pittsburgh. Bureau of Ships.

16—Bendix Corp., Oxnard, Calif. $2,586,462. Engineering Services, Operational Maintenance of government instrumentation systems and associated range facilities located at down range sites and aboard surface ships of the Western Test Range. Navy Purchasing Office, Los Angeles, Calif.

—Grumman Aircraft Engineering Corp., Bethpage, L.I., N.Y. $1,000,000. Study including examination of possible wider application of F111B missile system. Bethpage. Bureau of Weapons.

—General Motors Corp., Allison Division, Indianapolis, Ind. $1,075,000. Repair kits for T-56 engines. Indianapolis. Navy Aviation Supply Office, Philadelphia, Pa.

18—C. J. Pauknw & Associate, Pasadena, Calif. $3,691,000. Construction of various facilities at the Marine Corps Base, Camp Pendleton, Calif. Director, Southwest Div. Bureau of Yards and Docks.

21—Radio Engineering Laboratories, Inc., L.I., N.Y. $1,090,660. Components for communications equipment. Long Island City. Bureau of Ships

23—Raytheon Co., Lexington, Mass. $17,521,003. SPARROW III guided missiles and related items. Lowell, Mass. Bureau of Weapons.

—Pacific Marine Constructors, Seattle, Wash. $2,660,000. Restoration of a fuel pier and supply wharf. Naval Station Kodiak, Alaska. Director, Northwest Div., Bureau of Yards and Docks.

—Hughes Aircraft Co., Culver City, Calif. $2,769,100. PHOENIX missile system. Culver City. Bureau of Weapons.

—New Mexico State University, University Park, N.M. $2,042,299. Services and materials to operate and maintain world-wide missile range doppler tracking systems and instrumentation facilities. Navy Purchasing Office, Los Angeles, Calif.

—Western Electric Co., Inc., New York, N.Y. $1,100,800. Rehabilitation of Pacific Missile Range test communication cable plants at Point Mugu, Calif. and San Nicolas Island, Calif. Director, Southwest Div., Bureau of Yards and Docks.

24—Polarad Electronics Corp., Long Island City, N.Y. $2,513,225. Radio frequency amplifier equipment for Navy ships. Long Island City. Bureau of Ships.

—General Precision, Inc., Clifton, N.J. $1,438,333. Navigation computer sets for Navy aircraft. Clifton. Bureau of Weapons.

—Collins Radio Co., Cedar Rapids, Iowa. $1,629,900. Radio sets for Navy aircraft. Cedar Rapids. Bureau of Weapons.

—R. F. Communications, Inc., Rochester, N.Y. $6,266,539. Radio transmitters and associated equipment for Navy ships. Rochester. Bureau of Ships.

25—City Electric Inc., Seattle, Wash. $2,049,000. Construction of power system improvements at the Naval Station and Naval Communication Station, Adak, Alaska. Director, Northwest Div., Bureau of Yards and Docks.

—**Westinghouse Electric Corp.**, Pittsburgh, Pa. $3,349,670. Components for nuclear powered submarines. Pittsburgh. Bureau of Ships.

—**General Electric Co.**, Washington, D.C. $2,167,960. Reconditioning of 25 Government furnished turbine generator sets. Fitchburg, Mass. Bureau of Ships.

—**Westinghouse Electric Corp.**, Pittsburgh, Pa. $1,500,000. Research and development in nuclear propulsion plants for naval ships. Pittsburgh, Pa. Bureau of Ships.

—**Columbia University**, New York, N.Y. $1,254,000. Research on Project ARTEMIS. Dobbs Ferry, N.Y. Office of Naval Research.

—**Link Group-General Precision Inc.**, Binghampton, N.Y. $8,716,809. F4D and RF4C weapons systems training sets. Binghampton and Palo Alto, Calif. Naval Training Device Center, Port Washington, N.Y.

—**Aeronautics Division, North American Aviation Inc.**, Anaheim, Calif. $3,014,882. Spare parts for navigational systems for the A5A/RA5C aircraft. Anaheim. Navy Aviation Supply Office, Philadelphia, Pa.

—**United Aircraft Corp.**, Norwalk, Conn. $3,263,602. Spare parts for radar sets for the A–6A aircraft, Norwalk. Navy Aviation Supply Office, Philadelphia, Pa.

—**Teletype Corp.**, Skokie, Ill. $1,817,596. Teletypewriters, repair parts and associated equipment. Skokie. Bureau of Ships.

—**Ingalls Shipbuilding Corp.**, Pascagoula, Miss. $24,374,150. Construction of a landing ship dock (LSD). Pascagoula. Bureau of Ships.

28—**International Telephone & Telegraph Corp.**, Nutley, N.J. $2,937,500. Attack Center #3 and retrofits for Attack Centers #1 and 2 at Anti-Submarine Warfare School, Pearl Harbor, Hawaii. Nutley. Naval Training Device Center, Port Washington, N.Y.

—**General Dynamics Corp.**, Groton, Conn. $2,175,000. Modification of the Submarine Training Facility, New London, Conn. Groton. Bureau of Ships.

—**General Electric Co.**, Schenectady, N.Y. $1,869,739. Designing and furnishing of reactor plant equipment for nuclear powered ships. Schenectady. Bureau of Ships.

—**Muncie Gear Co.**, Muncie, Ind. $2,037,750. Nozzle and fin assemblies for the 2.75 inch rocket. Muncie. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—**Western Electric Co.**, New York, N.Y. $1,250,000. Components for hydro-phone assemblies and multiplexers for oceanographic research. Burlington, N.C. Navy Purchasing Office, Washington, D.C.

—**Aerojet General Corp.**, Sacramento, Calif. $6,215,980. Work on the SPARROW-SHRIKE program. Sacramento. Naval Propellant Plant, Indian Head, Md.

—**Amcel Propulsion Co.**, Swannanoa, N.C. $1,953,600. Aircraft flare parachutes. Swannanoa. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—**Radio Corporation of America**, Camden, N.J. $1,235,300. Fabrication, test and experimental models of HF radio sets for Navy aircraft. Camden. Bureau of Weapons.

—**Sparton Corp.**, Jackson, Mich. $1,013,400. Sonobuoys. Jackson. Bureau of Weapons.

—**Hughes Tool Co.**, Culver City, Calif. $7,442,022. 20mm gun pods and related equipment. Culver City. Bureau of Weapons.

—**General Dynamics Corp.**, Pomona, Calif. $2,802,805. Design and development of retrofit changes to improve performance capabilities of TERRIER and TARTAR missiles. Pomona. Bureau of Weapons.

—**International Telephone and Telegraph Corp.**, Nutley, N.J. $1,608,200. Electronic navigation sets. Nutley. Bureau of Ships.

—**Greenhut Construction Co., Inc.**, Pensacola, Fla. $1,544,648. Construction of a composite medical facility addition at Keesler AFB, Miss. Director, Gulf Division, Bureau of Yards and Docks.

—**Westinghouse Electric Corp.**, Pittsburgh, Pa. $3,900,000. Design and furnish reactor plant components for nuclear powered ships. Pittsburgh. Bureau of Ships.

—**Johns Hopkins University, Applied Physics Lab**, Silver Spring, Md. $3,880,200. Research and development on guided missile programs. Silver Spring. Bureau of Weapons.

—**Garrett Corp.**, Los Angeles, Calif. $2,986,100. Ground power units for starting jet engines. Los Angeles. Bureau of Weapons.

29—**M.I.T.**, Cambridge, Mass. $5,208,000. Research on advanced time-sharing computer system. Cambridge. Office of Naval Research.

—**Pennsylvania State University**, University Park, Pa. $1,867,877. Research and development of MK 48 torpedo. University Park. Bureau of Weapons.

—**ITT Gilfillan, Inc.**, Los Angeles, Calif. $1,674,000. Indicator system for AN/SPS–48 Radar Set. Los Angeles. Bureau of Ships.

—**Sperry Rand Corp.**, St. Paul, Minn. $4,436,780. Shipboard automatic data processing systems and associated equipment. St. Paul. Bureau of Ships.

—**General Motors Corp.**, Detroit, Mich. $1,457,480. Shipboard diesel engines. Detroit. Bureau of Ships.

30—**Electronics Specialty Co.**, Los Angeles, Calif. $1,045,518. Pre-detection, receive/record telemetry systems for the Pacific Missile Range. Los Angeles. Navy Purchasing Office, Los Angeles, Calif.

—**Dynatronics Inc.**, Orlando, Fla. $1,426,794. Automatic tracking antennas for the Pacific Missile Range. Orlando. Navy Purchasing Office, Los Angeles, Calif.

—**Astrodata, Inc.**, Anaheim, Calif. $1,100,000. Telemetry separation and display systems for the Pacific Missile Range. Anaheim. Navy Purchasing Office Los Angeles, Calif.

—**Norris Thermador Corp.**, Los Angeles, Calif. $2,184,183. Motor tubes for the 2.75 inch rocket. Los Angeles. Naval Propellant Plant, Indian Head, Md.

—**General Dynamics Corp.**, San Diego, Calif. $1,887,224. Spare parts for A5A/RA5C aircraft bomb director sets. San Diego. Aviation Supply Office, Philadelphia, Pa.

—**Farmers Tool and Supply Co.**, Denver, Colo. $2,893,396. Nozzle and fin assemblies for the 2.75 inch rocket. Denver. Naval Proellant Plant, Indian Head, Md.

—**Mike Bradford Co.**, Miami, Fla. $2,888,322. Composite medical facility at Shaw AFB, S.C. Director, Southeast Div., Bureau of Yards and Docks.

—**Atlantic Research Corp.** Alexandria, Va. $1,923,840. Rocket motors for TERRIER missiles. Gainesville, Va. Bureau of Weapons.

—**Oberg Construction Corp.**, Northridge, Calif. $1,943,810. Construction of barracks at Naval Station, Long Beach, Calif. Director, Southwest Div., Bureau of Yards and Docks.

—**International Business Machines Corp.**, Bethesda, Md. $2,749,000. Computer orientated exploratory development. Honolulu, Hawaii; Norfolk, Va.; Boston, Mass.; Bethesda, Md.; and Washington, D.C. Navy Purchasing Office, Washington, D.C.

—**Westinghouse Electric Corp.**, Baltimore, Md. $20,015,688. Radar sets and related equipment. Baltimore. Bureau of Weapons.

—**H. W. Stanfield Construction Corp., and S. L. Haehn, Inc.**, San Diego, Calif. $2,549,339. Construction of a mess hall at the Naval Training Center, San Diego, Calif. Director, Southwest Div., Bureau of Yards and Docks.

AIR FORCE

1—**General Electric Co.**, Johnson City, N.Y. $2,100,000. Procurement of optical sights for F–4D aircraft weapons systems. Johnson City. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**North American Aviation, Inc.**, Los Angeles, Calif. $17,000,000. XB–70 flight test program. Edwards Air Force Base, Calif. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**North American Aviation, Inc.**, Canoga Park, Calif. $1,042,037. THOR rocket engine propulsion systems. Neosho, Mo., and Canoga Park. Space Systems Div. (AFSC), Los Angeles, Calif.

2—**Chromalloy Corp.**, New York, N.Y. $1,635,350. Repair of J–57 aircraft engines. Hawthorne, Calif. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

—**Lockheed Missiles and Space Co.**, Sunnyvale, Calif.

$10,789,100. Launch services for AGENA-D program. Vandenberg AFB, Calif. Space Systems Div. (AFSC), Los Angeles, Calif.

3—**Philco Corp.** (Western Development Labs), Palo Alto, Calif. $2,500,000. Work on satellite control network. Palo Alto. Space Systems Div. (AFSC), Los Angeles, Calif.

—**General Dynamics Corp.**, Convair Div., San Diego, Calif. $1,233,047. Spare parts in support of ATLAS/AGENA booster program. San Diego. Space Systems Div. (AFSC), Los Angeles, Calif.

4—**Bendix Corp.**, Teterboro, N.J. $2,607,227. Aircraft gyroscopes, amplifiers and related ground equipment for T–38 aircraft. Teterboro. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Burtek, Inc.**, Tulsa, Okla. $1,190,130. Instrument flight trainers. Tulsa. Aeronautical Systems Div., Wright-Patterson AFB, Ohio.

—**Federal Electric Corp. of International Telephone and Telegraph Corp.**, Paramus, N.J. $1,663,000. Defense Early Warning System improvement work. Paramus. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—**Standard Steel Works, Inc.**, North Kansas City, Mo. $1,293,708. 2,600-gallon tank trucks. North Kansas City. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—**Wilcox Electric Co., Inc.**, Kansas City, Mo. $1,530,730. Aircraft communications equipment. Kansas City. Warner Robins Air Materiel Area (AFLC), Robins AFB, Ga.

7—**Oshkosh Motor Truck, Inc.**, Oshkosh, Wis. $1,702,956. Overhaul of snow removal equipment. Oshkosh. Warner-Robins Air Material Area (AFLC), Robins AFB, Ga.

—**Martin Marietta Corp.**, Aerospace Div., Orlando, Fla. $1,018,540. Modification kits for the F–105D aircraft. Orlando. Mobile Air Materiel Area (AFLC), Brookley AFB, Ala.

8—**Emerson Electric Co.**, St. Louis, Mo. $1,367,708. Repair and modification of components of F–89, F–101 and F–102 aircraft fire control systems. St. Louis. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

9—**Electronic Specialty Co.**, Los Angeles, Calif. $4,053,154. Aerospace ground equipment in support of the ALR–20 airborne receiver used in B–52 aircraft. Los Angles. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Boeing Co.**, Seattle, Wash. $3,177,367. Missiles and related equipment for the sixth MINUTEMAN wing. Seattle. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Boeing Co.** Seattle, Wash. $1,304,403. Aerospace ground equipment, training equipment and spare parts for MINUTEMAN Wing VI. Seattle. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Aerojet General Corp.**, Liquid Rocket Operations, Sacramento, Calif. $5,101,000. First and second stage engines for the TITAN III–X/AGENA program. Sacramento. Space Systems Div. (AFSC), Los Angeles, Calif.

—**North American Aviation, Inc.**, Los Angeles, Calif. $2,000,000. Production and installation of 335-gallon wing tanks, pylons and related hardware. Los Angeles. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—**Curtiss-Wright Corp.**, Wood-Ridge, N.J. $1,400,003. Engineering services in support of Navy and Air Force aircraft engines. Wood-Ridge. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

10—**General Electric Co.**, Flight Propulsion Div., Cincinnati, Ohio. $1,100,000. Exploratory development of a high temperature variable area turbine. Cincinnati. Systems Engineering Group, (AFSC), Wright-Patterson AFB, Ohio.

—**Microwave Dynamics Corp.**, Mesa, Ariz. $1,703,118. Engine starter cartridges. Mesa. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Lockheed Aircraft Corp.**, Marietta, Ga. $1,000,000. Provision services and supplies in support of C–141A performance recorder program. Marietta. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**General Dynamics Corp.**, Fort Worth, Tex. $1,100,000. Manufacture of equipment for a radar system used in B–58 aircraft. Fort Worth. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

11—**Electronic Specialty Co.**, Los Angeles, Calif. $2,115,256. Spare parts in support of ALR–20 airborne receiver set used in B–52 aircraft. Los Angeles. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—**Massachusetts Institute of Technology**, Instrumentation Laboratory, Cambridge, Mass. $1,065,000. Advanced Development of Self-Aligning Boost Re-Entry (SABRE) inertial guidance system. Cambridge. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Lockheed Missiles and Space Co.**, Sunnyvale, Calif. $3,090,015. Production of AGENA boosters. Sunnyvale. Space Systems Div. (AFSC), Los Angeles, Calif.

—**Marquardt Corp.** Van Nuys, Calif. $4,130,000. Work on a classified program. Van Nuys. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

14—**Bendix Corp.**, Teterboro, N.J. $2,052,636. Computers and amplifiers for F–4 aircraft. Teterboro. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

15—**Radiation Service Co.**, Melbourne, Fla. $1,626,442. Operation, maintenance and repair of the ballistic missile re-entry data processing system. Holloman AFB, N.M. Air Force Missile Development Center (AFSC), Holloman AFB, N.M.

—**General Motors Corp.**, Indianapolis, Ind. $24,824,992. T–56 aircraft engines. Indianapolis. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

16—**Avco Corp.**, Stratford, Conn. $4,011,500. Production of T–53 aircraft engines and related material for Army and Air Force aircraft. Statford. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Western Development Laboratories**, Palo Alto, Calif. $1,600,000. Technical services for satellite control facilities. Palo Alto. Space Systems Div. (AFSC), Los Angeles, Calif.

—**General Electric Co.**, Syracuse, N.Y. $1,817,419. Guidance systems for ATLAS boosted launch vehicles. Syracuse and Utica, N.Y. Space Systems Div. (AFSC), Los Angeles, Calif.

17—**Sargent-Fletcher Co.**, El Monte, Calif. $13,832,000. 370-gallon fuel tank assemblies for F–4C aircraft. El Monte. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**General Electric Co.**, Cincinnati, Ohio. $4,381,444. 450-gallon wing tanks and pylon assemblies for F–105 aircraft. Cincinnati. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Drexel Dynamics Corp.**, Horsham, Pa. $1,075,602. Production of bomb dispensers, spare parts, and related material. Horsham. San Antonio Air Material Area (AFLC), Kelly AFB, Tex.

—**Boeing Co.**, Seattle, Wash. $1,700,000. Production of missiles and related equipment for the sixth MINUTEMAN wing. Seattle. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

18—**Avco Corp.**, Stratford, Conn. $2,511,671. Production of T55–L–7 shaft turbine engines to support the Army CH–47A aircraft program during FY 65. Stratford. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**General Electric Co.**, Cincinnati, Ohio. $7,130,000. J79–GE–15 turbojet engines for RF–4C aircraft. Cincinnati. Systems Engineering Group (AFSC), Wright-Patterson AFB, Ohio.

—**General Electric Co.**, Cincinnati, Ohio. $1,300,000. Design, investigation and feasibility demonstration of a high stage loading turbine engine compressor and fan. Cincinnati. Systems Engineering Group (AFSC), Wright-Patterson AFB, Ohio.

—**Boeing Co.**, Seattle, Wash. $1,138,800. Assembly and checkout of MINUTEMAN engineering test facility. Hill AFB, Utah. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Comstock and Wescott, Inc.**, Cambridge, Mass. $1,444,085. Design, development, construction and integration of instrumentation for use in satellite and rocket flights to study solar radiation. Cambridge. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Mass.

—**Slick Corp.**, San Francisco, Calif. $6,185,128. International air services. MATS, Scott AFB, Ill.

—**Capital Airways, Inc.**, Nashville, Tenn. $4,326,872. International air services. MATS, Scott AFB, Ill.

—**Northwest Orient Airlines, Inc.**, St. Paul, Minn. $1,014,394. International air services. MATS, Scott AFB, Ill.

—**World Airways, Inc.**, Oakland, Calif. $2,216,781. International and domestic air services. MATS, Scott AFB, Ill.

—**Flying Tiger Line**, Burbank, Calif. $1,112,769. Domestic air services. MATS, Scott AFB, Ill.

—**Zantop Air Transport, Inc.**, Inkster, Mich. $7,367,316. Domestic air services. MATS, Scott AFB, Ill.

21—**Lear Siegler, Inc.**, Grand Rapids, Mich. $1,507,903. Remote attitude flight instruments for aircraft. Grand Rapids. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Vitro Corp. of America**, Valparaiso, Fla. $8,024,944. Management of operations of land range test areas and the Eglin Gulf Test Range. Valparaiso, Fla. Air Proving Ground Center, Eglin AFB, Fla.

22—**Collins Radio Co.**, Richardson, Tex. $1,077,651. Production of transportable communications systems (AN/TRC–115). Richardson. Oklahoma City Materiel Area (AFLC), Tinker AFB, Okla.

—**Hughes Aircraft Co.**, Culver City, Calif. $3,000,000. Production of adaptor kits for FALCON missiles. Tucson, Ariz. and Culver City. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**General Motors Corp.**, Indianapolis, Ind. $1,829,568. Component improvement program to T–56 engines. Indianapolis. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

23—**General Dynamics Corp.**, Rochester, N.Y. $1,466,400. Mobile communications equipment. Rochester. Electronics Systems Div. (AFSC), L. G. Hanscom Field, Mass.

—**Kollsman Instrument Corp.**, Elmhurst, N.Y. $5,998,960. Spare parts for mapping and survey systems. Elmhurst. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

24—**Martin Marietta Corp.**, Baltimore, Md. $2,025,078. Modification and inspection and repair of (IRAN) of B–57 aircraft. Middle River, Md. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—**Avco Corp.**, Wilmington, Mass. $2,060,755. Research and development work on a low observable re-entry vehicle. Wilmington. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

25—**American Electric, Inc.**, Paramount, Calif. $1,787,436. Ordnance. Paramount and El Cajon, Calif. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**Collins Radio Co.**, Dallas, Tex. $4,195,000. Production of hard high frequency antenna systems for MINUTEMAN installations. Richardson, Tex. Ballistics Systems Div., Norton AFB, Calif.

—**Thiokol Chemical Corp.**, Brigham City, Utah. $3,195,500. Design, development and firing of a 156-inch solid rocket motor. Promontory, Utah. Space Systems Div., Los Angeles, Calif.

—**United Technology Center**, Sunnyvale, Calif. $10,500,000. Design, development, fabrication delivery and flight testing of large segmented solid propellant motors. Sunnyvale. Space Systems Div., Los Angeles, Calif.

—**Dalmo Victory Co.**, Belmont, Calif. $1,482,734. Production of long range chemical warfare agent detectors. Belmont. Air Proving Ground Center, Eglin AFB, Fla.

—**Cutler-Hammer, Inc.**, Deer Park, L.I., N.Y. $1,703,840. Spare parts for airborne electronic reconnaissance systems. Deer Park. Warner-Robins Air Materiel Area, Robins AFB, Ga.

28—**Cessna Aircraft Co.**, Wichita, Kan. $1,803,764. T–37 series aircraft and related equipment. Wichita. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**North American Aviation, Inc.**, Columbus, Ohio. $3,698,969. Modification of T–28 aircraft. Columbus. Air Materiel Area (AFLC), McClellan AFB, Calif.

—**Hughes Aircraft Co.**, Culver City, Calif. $13,468,725. Modification of AIM (FALCON) series missiles, field checkout equipment and existing spare parts and missile containers. Tucson, Ariz. Middletown Air Materiel Area (AFLC), Olsted AFB, Pa.

—**International Latex Corp.**, Dover, Del. $7,870,825. Production of double-walled, air inflatable shelters. Frederica, Del. 2750th Air Base Wing (AFLC), Wright-Patterson AFB, Ohio.

—**International Telephone and Telegraph Corp.**, Nutley, N.J. $1,693,204. Production of LORAN navigational sets and related equipment for C–141 aircraft. Nutley. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

29—**Aerojet General Corp.**, Downey, Calif. $5,493,395. Production of clustered, small bomb dispenser units. Downey. Air Proving Ground Center (AFSC), Eglin AFB, Fla.

—**Western Electric Co., Inc.**, New York, N.Y. $2,000,000. Production of TITAN III guidance equipment. Burlington, N.C. Space Systems Div. (AFSC), Los Angeles, Calif.

—**Sargent-Fletcher Co.**, El Monte, Calif. $3,749,000. Ordnance items. El Monte. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**Lockheed Aircraft Corp.**, Sunnyvale, Calif. $2,738,502. Engineering support for AGENA rocket systems. Santa Cruz, Calif. Space Systems Div. (AFSC), Los Angeles, Calif.

—**Armco Steel Corp.**, Middletown, Ohio. $2,306,220. Production of vertical metal retaining walls. Middletown. 2750th Air Base Wing (AFLC), Wright-Patterson AFB, Ohio.

30—**Laboratory for Electronics, Inc.**, Boston, Mass. $1,217,515. Radar test sets in support of F–105 radar equipment. Danvers, Mass. Mobile Air Materiel Area (AFLC), Brookley AFB, Ala.

—**North American Aviation, Inc.**, Los Angeles, Calif. $5,000,000. Continuation of XB–70 flight test program. Edwards AFB, Calif. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**A. J. Industries, Inc.**, El Monte, Calif. $2,084,337. Production of 450 and 650 gallon wing fuel tanks for F–105 aircraft. El Monte. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Revere Copper and Brass Co., Inc.**, Brooklyn, N.Y. $5,767,000. Classified project. Brooklyn. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Aerojet-General Corp.**, Sacramento, Calif. $3,006,414. Advanced storable liquid propellant rocket engines. Sacramento. Air Force Flight Test Center (AFSC), Edwards AFB, Calif.

—**Gary Aircraft Corp.**, Victoria, Tex. $2,083,008. Inspection and repair of C–54 aircraft. Victoria. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—**Royal Jet Division of Royal Industries, Inc.**, Alhambra, Calif. $1,628,900. Jettisonable fuel tanks for F–104 aircraft. Alhambra. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—**Lockheed Propulsion Co.**, Redlands, Calif. $5,500,000. Design, development and firing of 156-inch solid rocket motors. Redlands. Space Systems Div. (AFSC), Los Angeles, Calif.

—**Philco Corp.**, Palo Alto, Calif. $1,000,000. Work on a satellite program. Palo Alto. Space Systems Div. (AFSC), Los Angeles, Calif.

—**General Electric Co.**, Cincinnati, Ohio. $8,000,000. Engine components for high performance strategic aircraft. Cincinnati. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Boeing Co.**, Morton, Pa. $1,260,000. Modification of CH–47 helicopters. Morton. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Bell Aeroscope Corp.**, Fort Worth, Tex. $3,034,000. Production of UH–1F helicopters and related equipment. Fort Worth. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

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New Airmobile Division Authorized for U.S. Army

Secretary of Defense Robert S. McNamara has authorized the formation of a new airmobile division as part of the Army's 16 division force structure.

Secretary McNamara said the new division will greatly increase the Army's growing capabilities to meet any kind of threat. It places the Army on the threshold of an entirely new approach to the conduct of the land battle. Use of the helicopter to deliver men and weapons on the battlefield will result in greater freedom of movement and exploitation of the element of surprise.

The Secretary also has asked the Chief of Staff, U.S. Army, to recommend to the Joint Chiefs of Staff by January 1, 1966, the specific major airborne and airmobile units to be included within the Army's 16-division structure.

The new division will be organized and trained at Fort Benning, Ga., and will be designated the First Cavalry Division (Airmobile).

Resources now available within the Army will be used to form the division. Personnel and equipment will come from both the Second Infantry Division and the experimental Eleventh Air Assault Division at Fort Benning. The First Cavalry Division, now serving in Korea, will be redesignated the Second Infantry Division.

The First Cavalry Division (Airmobile) will have a strength of 15,787 men and will be equipped with 434 aircraft, most of which will be helicopters. One brigade will be capable of parachute operations. Equipment will include approximately 1,600 ground vehicles.

The greatest contribution of the new division will be to improve combat effectiveness in operations where terrain obstacles and undeveloped communications networks could give enemy guerrilla or light infantry forces an advantage over our standard formations.

Development of the airmobile division is the result of three years of study by the Army, Air Force and U.S. Strike Command. In April 1962, Secretary McNamara asked the Army to take a new look at its tactical mobility, including the greater use of aviation. The basic concept of the new division evolved from the comprehensive program of studies and tests conducted by the Army's Tactical Mobility Requirements Board which was formed in response to the Secretary's request.

Youth Job Program Working Well in DOD

The Department of Defense program to establish additional jobs this summer in support of the President's Youth Opportunity Campaign has passed the half-way mark.

As of June 11, 1965, 5,368 summer jobs for youths 16-21 years old had been filled or committed as part of DOD's summer job campaign.

This represents more than half the 10,000 new jobs that Secretary of Defense Robert S. McNamara ordered established as the DOD implementation of the campaign. Secretary McNamara's order asked that all military and DOD agencies establish new summer jobs at a ratio of about one position for every 100 employees currently on the rolls. There are approximately 1,000,000 employees on the payroll.

President Johnson also asked that industry and private employers establish extra work opportunities for youth this summer. The President has requested that all employers who desire to co-operate in this program contact the nearest State Employment Office.

The new job opportunities for youth made available by DOD activities are in addition to regular summer employment.

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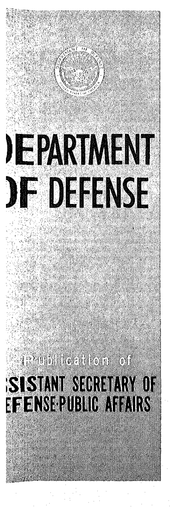

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Vietnam Crisis

". . . we are in Vietnam to fulfill one of the most solemn pledges of the American Nation. . . .

"I have asked the commanding general—General Westmoreland—what he needs to meet mounting aggression. He has told me. And we will meet his needs. . . .

"I have today ordered to Vietnam the Air Mobile Division, and certain other forces which will raise our fighting strength from 75,000 to 125,000 men almost immediately. Additional forces will be needed later, and they will be sent as requested. . . .

"These steps, like our other actions in the past, are carefully measured to do what must be done to bring an end to aggression and a peaceful settlement."

The foregoing is quoted from President Johnson's statement at the White House news conference held on July 28. Excerpts from the statement of the Secretary of Defense to the Senate Appropriations Committee requesting an increase in funds to implement the President's Vietnam buildup appear on page 1.

DEFENSE INDUSTRY
BULLETIN

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The purpose of the *BULLETIN* is to serve as a means of communication between the Department of Defense (DOD) and its authorized agencies and defense contractors and other business interests. It will serve as a guide to industry concerning official policies, programs and projects, and will seek to stimulate thought by members of the defense-industry team in solving the problems that may arise in fulfilling the requirements of the DOD.

Material in the *BULLETIN* is selected to supply pertinent unclassified data of interest to the business community. Suggestions from industry representatives for topics to be covered in future issues should be forwarded to the Business & Labor Division.

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Industrial Security Management Course Open to Industry

Representatives of industrial and research organizations have been invited by the Department of Defense to attend an Industrial Security Management Course to be held at the Army Intelligence School, Fort Holabird, Baltimore, Md.

Purpose of the five-day course, which will be given in five sessions, is to achieve a common level of understanding, interpretation and application of DOD regulations and directives among security personnel of industry.

Organizations interested in obtaining quotas for the course should contact their cognizant security office and submit the names, addresses, levels of security clearance of prospective representatives and preferred dates of attendance.

The course is open to security officials of industry who are responsible for safeguarding classified information in the custody of contractors of DOD or other user agencies. Persons attending the course are required to have a current security clearance of Confidential or higher. Company confidential clearance is acceptable.

Dates for the five sessions have been set as follows: Sept. 26–Oct. 1; Nov. 14–19; Dec. 12–17; Feb. 27–March 4 and March 27–April 1.

The course is offered without charge. However, transportation and living expenses incurred while attending the course must be paid by the representatives.

Among the subjects to be covered during the 38 hours of instruction are basic principles of industrial security, access authorization actions, security requirements and vulnerabilities and control.

New Program for Obtaining Blueprints Announced by AFLC

The Air Force Logistics Command, working in cooperation with the Air Force Systems Command, has designed a new way of obtaining blueprints and engineering drawings needed for the modification and repair of Air Force weapons systems.

The program is proving so successful that it will be adopted for all aircraft entering the Air Force inventory.

Under the new system, the contractor maintains the drawings and furnishes them to Air Force users upon request. An established system of priorities will speed needed documents to the user in less than a day under emergency conditions. Urgent requests can be filled in three days while routine requirements may take up to 30 days.

The new system, referred to as "Supply of Essential Engineering Data" (SEED), is being service-tested on the Lockheed-built C-141 Starlifter transport now in production. Under the SEED method, up-to-date drawings can be quickly obtained when required from the Lockheed Aircraft Corporation, prime contractor on the Starlifter. Lockheed maintains the drawings and keeps them current in the company's own depository.

The new system has drastically reduced costs of buying such data on the C-141. Under this system there will never be any doubt as to the currency of the drawings, since the contractor must keep them up to date for manufacturing purposes.

The new method of obtaining needed engineering data also applies to the ground support equipment peculiar to a certain aircraft and it can be used for communication and warning systems, as well as aerospace weapon systems.

Vietnam Buildup

Secretary of Defense McNamara Explains Requirements to Congress

Secretary of Defense
Robert S. McNamara

Excerpts from statement of Secretary of Defense Robert S. McNamara before the Subcommittee on Department of Defense Appropriations of the Senate Committee on Appropriations.

* * * * * * * *

Role of U.S. Combat Forces in South Vietnam.

The central reserve of the South Vietnamese Army has been seriously depleted in recent months. The principal role of U.S. ground combat forces will be to supplement this reserve in support of the front line forces of the South Vietnamese Army. The indigenous paramilitary forces will deal with the pacification of areas cleared of organized Viet Cong and North Vietnamese units, a role more appropriate for them than for our forces.

The government of South Vietnam's strategy, with which we concur, is to achieve the initiative, to expand gradually its area of control by breaking up major concentrations of enemy forces, using to the maximum our preponderance of air power, both land and sea-based. The number of "fixed-wing" attack sorties by U.S. aircraft in South Vietnam will increase many fold by the end of the year. Armed helicopter sorties will also increase dramatically over the same period, and extensive use will be made of heavy artillery, both land-based and sea-based. At the same time our Air and Naval forces will continue to interdict the Viet Cong supply lines from North Vietnam, both land and sea.

Although our tactics have changed, our objective remains the same. We have no desire to widen the war. We have no desire to overthrow the North Vietnamese regime, seize its territory or achieve the unification of North and South Vietnam or for special privileges of any kind. What we are seeking through the planned military buildup is to block the Viet Cong offensive, to give the people of South Vietnam and their armed forces some relief from the unrelenting Communist pressures—to give them time to strengthen their government, to re-establish law and order, and to revive their economic life which has been seriously disrupted by Viet Cong harassment and attack in recent months. We have no illusions that success will be achieved quickly, but we are confident that it will be achieved much more surely by the plan I have outlined. . . .

Further Increases in the Force Structure and Military Personnel.

To offset the deployments now planned to Southeast Asia, and provide some additional forces for possible new deployments, we propose to increase the presently authorized force levels. These increases will be of three types: (1) additional units for the active forces, over and above those reflected in the January Budget; (2) military personnel augmentations for presently authorized units in the active forces to man new bases, to handle the larger logistics workload, etc.; and (3) additional personnel and extra training for selected reserve component units to increase their readiness for quick deployment. We believe we can achieve this buildup without calling up the reserves or ordering the involuntary extension of tours, except as already authorized by law for the Department of the Navy. Even here the extension of officer tours will be on a selective basis and extensions for enlisted men will be limited, in general, to not more than four months. . . .

Increase in Army Forces.

For the Army, we plan to activate one division force, three brigade forces, a large number of helicopter companies, and their combat service support units. In addition, we plan to replace the military personnel drawn from the Strategic Army Forces to provide logistic support in Vietnam. The buildup of these forces will require a substantial expansion of the Army training establishment. The larger deployments to South Vietnam and the increase in Army military personnel generally will result in a higher number of men in transit and other support activities. A military personnel strength increase in the Army of 235,000 is provided for these purposes.

Augmentation of the three Marine Corps Division/Aircraft Wings.

Some 30,000 additional military personnel have been provided for the Marine Corps to augment existing units and to activate certain new units, such as helicopter squadrons, and communication, engineer and military police battalions, and to provide for the increased training and manpower pipeline requirements.

Strengthening the Naval Forces.

The increased tempo of attack carrier operations and the intensified costal patrol of Vietnam will require a small increase in the number of active ships in the Navy as well as an increase in the manning of the ships deployed to that area. These ships are required to operate at close to wartime tempos and, therefore, require higher manning levels than normally provided other fleet units. Furthermore, additional Navy personnel are needed to operate the new ports now being built in South Vietnam and to support the heavier logistics load at other bases. Other support activities, including pipeline, account for the balance of 35,000 additional personnel provided for the Navy.

Augmentation of the Air Force Strike and Airlift Capabilities.

In addition to the increased number of tactical attack sorties, we are also planning more B–52 sorties from Guam. To support the B–52 aircraft to be utilized for this mission, additional personnel will be needed at Guam, to handle ammunition, increased maintenance, and so forth. Support of the additional tactical fighter and troop carrier squadrons deployed to Southeast Asia will require more men.

With greatly increased flow of traffic to South Vietnam, a further early increase in our airlift capability is indicated. We plan to approximately double our existing capability for sustained operations through higher rates of utilization of present airlift aircraft. The more modern MATS aircraft, which now have a planned utilization rate of five hours per day, will be raised and held at eight hours per day. The C-130E troop carrier aircraft in Tactical Air Command and in the Pacific, which now have a planned operating rate of one and one-half hours per day, will be raised and held at five hours per day. More personnel will be needed.

The increase in the number of Air Force military personnel will require an expansion of the training establishment, which together with other support activities, principally the logistics base, will require a total increase in the Air Force end FY 1966 military personnel strength of 40,000.

In total, 340,000 military personnel will be added to the active forces. To provide this additional strength, the current draft call rate of about 17,000 per month will be approximately doubled.

Increased Readiness for the Reserve Components.

As I noted earlier, we must be prepared to deploy additional forces to Southeast Asia over and above those now planned. Furthermore, we must also be prepared to deal with the crises elsewhere in the world. Accordingly, steps should be taken now to raise still further the readiness of selected reserve component forces so that they could be quickly deployed if the need should arise.

There are a number of steps which could be taken towards this end. The units could be manned at full strength, the number and duration of the paid drills could be increased, additional tours of active duty for training could be provided, the equipment required for movement could be identified and earmarked, etc. . . .

Other Military Personnel and Operation and Maintenance Costs.

Over and beyond the costs of the additional military personnel, there will also be increased costs for the operation of installations and facilities in Southeast Asia: the increases in flying and steaming hours; the consumption of spares and repair parts; and the transportation of supplies and equipment to Southeast Asia. An increase of almost 36,000 "direct hire" civilian employees, raising the total at end FY 1966 to just short of one million, will also be required.

None of these personnel and operation and maintenance costs can be estimated with any degree of precision at the present time. We have yet to work out detailed personnel plans and to calculate, on a phased basis, the increases in activity rates, movements of troops and materiel and other operation and maintenance costs associated with the buildup in Southeast Asia. However, by the time we appear here next January with the FY 1967 budget estimates, we will have completed this work and we will have a much more precise estimate of all of these additional costs and our financial requirements for the balance of FY 1966.

Procurement and Construction.

As in the case of personnel and operation and maintenance costs, we have not as yet had sufficient time to develop detailed requirements and production and construction plans for the additional materiel and facilities needed for the support of the expanding operations in Southeast Asia. And again, we will be in a much better position next January to provide these details and to state our additional requirements for the balance of FY 1966. The $1.7 billion amendment to the Bill now before the Committee which we are proposing at this time will provide the additional financing needed through January to gear up the production machine—to accelerate the delivery of essential items already in production and to initiate the production of new items required for the support of our forces in Southeast Asia, as well as the co struction of the most urgently needed facilities. . . .

As you know, we have planned in our FY 1966 an prior year budgets a substantial buildup of war consum able stocks, particularly modern ordnance and ammun tion. If we are to fulfill these plans, we must replace wh we are drawing from these stocks for consumption Southeast Asia. Furthermore, we must provide replac ments for the aircraft being lost there in combat. An finally, we must buy some additional helicopters for th new Army and Marine Corps aviation units which w now plan to activate.

The higher activity rates planned for our forces Southeast Asia will increase considerably the consumptio of spares and repair parts for many types of equipmen Stocks of these items must be restored through increase production. We will also need to replace in our inver tories the additional quantities of equipment for the ne bases being established or expanded in Southeast Asi Funds for these purposes are included in the $1.7 billio supplemental.

Finally, the increased deployments of U.S. forces Southeast Asia will require an extensive program of con struction in South Vietnam and along the lines of com munication back to the United States. Included in th program are airfields, ports and troop support and logis tics facilities.

Summary

Last Wednesday in his statement on Vietnam, Presiden Johnson said, "I have asked the Commanding General General Westmoreland, what he needs to meet this mount ing aggression. He has told me. We will meet his needs."

The program I have outlined here today and the $1. million amendment to the FY 1966 Defense Appropriatio Bill now before the Committee will, in the collective judg ment of my principal military and civilian advisors an myself, provide the men, materiel and facilities require to fulfill this pledge, while at the same time maintainin the forces required to meet commitments elsewhere i the world. I earnestly solicit the full support of th Committee and the Congress for this program and budge request.

A flight of busy Air Force A-1E Skyraiders wing thei way to a target during a recent mission in Vietnam These "work horse" planes are from the 34th Tactica Group based at Bien Hoa.

Contract Definition

by

J. W. Grodsky, Office of Engineering Management
Office of Director, Defense Research & Engineering

'uring the past few years, a formal process, called ously Phase 1, Program Definition, Project Definition, ?, and now called Contract Definition, has preceded the iation of major engineering and operational systems elopment funded by the Department of Defense. The rall policy for this process was established by DOD ective 3200.9, "Project Definition Phase," dated Feb. 1964. A revised DOD Directive 3200.9, "Initiation of ;ineering and Operational Systems Development," was ed July 1, 1965.

ision of DOD Directive.

he basic policies regarding application of this process, ectives, prerequisites and procedures are largely un- ged by the revision. The substantive changes in the 1 revision are:

A change in the name of the process to "Contract nition" and use of the name "Concept Formulation" to ribe the period (unnamed in the earlier directive but etimes called "Phase Zero") preceding Contract Defi- on. The change in name is intended to imply (1) that definition effort during the Contract Definition phase nly a part of the total definition effort and (2) that emphasis during this phase is on definition of the lopment contract.

The placement of emphasis on initiation of Engineer- Development rather than on the initiation of Contract nition. The DOD wants to assure that Contract Defini- is recognized as a consequence of a conditional deci- to start Engineering Development and is the first of Engineering Development. Contract Definition is an end in itself.

Clarification and simplification of the procedure for esting and authorizing initiation of Engineering De- pment. The revised directive makes clear that, for e projects for which Contract Definition is required, Secretary of Defense will make the decision to initiate ineering Development.

Clarification of the degree of technology advancement wed during Engineering Development. These policies e originally promulgated in a Dec. 14, 1964, joint orandum by the Director of Defense Research & ineering and the Assistant Secretary of Defense (In- lations & Logistics) to the Military Departments.

Establishment of 18 weeks as the objective for the between submission of Contract Definition reports firm development proposals and a signed definitive lopment contract.

ctives.

he objectives of Concept Formulation and Contract nition, as stated in the directive, are quoted below:

. The objective of Concept Formulation is to provide the technical, economic and military bases for a conditional decision to initiate Engineering Development.

. The overall objective of Contract Definition is to determine whether the conditional decision to proceed with Engineering Development should be ratified. The ultimate goal of Contract Definition, where Engineering Development is to be performed by a contractor, is achievable performance specifications, backed by a firm fixed price or fully structured incentive proposal for Engineering Development. Included in this overall objective are subsidiary objectives to:

1. **Provide a basis for a firm fixed price or fully structured incentive contract for Engineering Development.**
2. **Establish firm and realistic performance specifications.**
3. **Precisely define interfaces and responsibilities.**
4. **Identify high risk areas.**
5. **Verify technical approaches.**
6. **Establish firm and realistic schedules and cost estimates for Engineering Development (including production engineering, facilities, construction and production hardware that will be funded during Engineering Development because of concurrency considerations).**
7. **Establish schedules and cost estimates for planning purposes for the total project (including production, operation and maintenance).**

Intent of Contract Definition.

The following paragraphs are intended to provide a better understanding of the basic intent of Contract Definition and the Concept Formulation period which immediately preceeds it.

The Planning/Definition Process. The total process of planning and defining a major development project takes place over an extended period of time. In a *development* project, it is not practical for all of the detailed planning and definition to take place before a major commitment of resources; however, it is practical for the *basic* planning and definition to be done before full-scale development starts. High confidence should exist, when a major commitment is made, that the project will be successful in terms of operational effectiveness, cost and schedule.

The DOD looks at the planning/definition process as consisting essentially of effort in two time periods. The first, Concept Formulation, is concerned with establishing the concept and accomplishing certain prerequisites to Engineering and Operational Systems Development. The second, Contract Definition, is aimed at refinement of the technical, cost, schedule and management aspects of the project and getting a good contract for the development. A decision is made at the conclusion of Concept Formulation and again at the conclusion of Contract Definition. The first decision, at the end of Concept Formulation, is whether the project should proceed into Engineering Development. An affirmative decision results in a conditional approval for Engineering Development, the first phase of which is Contract Definition. The second decision, at the end of Contract Definition, is expected to be a confirming decision, i.e., a decision to proceed wtih development as planned.

Fulfillment of Prerequisites. Unless sound military, technical, economic and management bases have been established *before* the development starts, there is a low probabaility that the operational, cost and schedule objectives will be achieved. A purpose of DOD Directive 3200.9 and the reviews conducted by the Military Departments and the Office of the Secretary of Defense is to assure that the necessary prerequisite work has been done—that threat and operational analyses, trade-off and cost-effectiveness studies and the development of components and technology have provided a firm foundation for the planned development. In the words of DOD Directive 3200.9:

> **Conditional approval to proceed with an Engineering Development will depend on evidence that the Concept Formulation has accomplished the following prerequisites:**
>
> 1. **Primarily engineering rather than experimental effort is required, and the technology needed is sufficiently in hand.**
> 2. **The mission and performance envelopes are defined.**
> 3. **The best technical approaches have been selected.**
> 4. **A thorough trade-off analysis has been made.**
> 5. **The cost effectiveness of the proposed item has been determined to be favorable in relationship to the cost effectiveness of competing items on a DOD-wide basis.**
> 6. **Cost and schedule estimates are creditable and acceptable.**

Conditional Approval of Development. A Departmental request for approval to initiate Engineering Development is evidence that the requesting Department considers that the prerequisites have been met, that the item is ready for *development for service* use and that it is *the* item of its type that should be developed. The approval that normally follows this request will be a *conditional* approval for development, not just an approval to start Contract Definition. This is an important point. Contract Definition is not intended to be a means of determining whether the project is ready for Engineering Development. Rather the decision on entry into Engineering Development will be made *before* Contract Definition. This decision will be made by the Secretary of Defense in consultation with his Research & Development, Comptroller, Systems Analysis and Installations & Logistics Assistants. Thus it will take into account not only the R&D aspects of the project but also the downstream aspects. The condition attached to the approval to proceed with Engineering Development is expected to be removed by satisfactory completion of Contract Definition.

The Intent of Contract Definition. This last part of the planning/definition process—Contract Definition—directly follows and is a consequence of the conditional decision to enter the Engineering Development. This process is intended (1) to validate the assumptions on which the conditional decision was made (thus permitting the condition to be removed) and (2) to secure a good contract for the development project.

Nature of the Development Contract. This contract must be definitive, not a letter contract. Further, the development contract must be firm fixed-price, fixed-price incentive or cost-plus-incentive-fee. These kinds of contracts, rather than cost-plus-fixed-fee, are feasible when the prerequisites to engineering development have been met and the development project has been well defined.

Optimization of the End Product. The process of Concept Formulation/Contract Definition is intended to provide assurance that the proposed weapon system or equipment has been optimized from standpoints of total cost, schedule and operational effectiveness. Several factors can contribute to this goal:

- First, adequate and pertinent detailed study and development during Concept Formulation.
- Second, a competitive environment during Contract Definition and the design of good incentives for the development contract. These can provide strong motivation for optimization.
- Third, an environment that stimulates creativity and encourages the examination of alternatives within the framework of the mission and performance envelopes and the best overall technical approach derived during Concept Formulation.
- Fourth, guidance by the Government (principally the Departmental project office), both at the Government's initiative and in response to questions by the contractors.

Indoctrination Program.

The Department of Defense, in cooperation with the National Security Industrial Association, the Aerospace Industries Association and the Electronic Industries Association, is sponsoring a series of indoctrination seminars and workshops on Contract Definition during the period Aug. 17—Oct. 13 of this year. The series will include three kinds of sessions: Top Management Indoctrinations, Middle Management Orientations and Instructor Workshops. The sessions will be small enough to permit discussion among the participants. Although a number of indoctrination sessions will be held at major defense locations throughout the country, the scheduled sessions will probably not accommodate all of those interested in attending. Therefore, the three-day workshops are intended to go into considerable depth and provide a means of training instructors from the Military Departments and industry who can indoctrinate or train additional people from their own organizations. The sessions are described in the following paragraphs.

I. Top Management Indoctrination.

These sessions (approximately three hours each) are intended to provide *indoctrination* only, not-in depth training. The indoctrination will be oriented primarily to Defense Department and industry executives in the decision chain for major development projects. Attendance for each session will be limited to 50 (25 Government and 25 industry). Each session will, in addition to providing a general indoctrination and orientation to those unfamiliar wtih Contract Definition, highlight experience to date with this process and changes in the July 1, 1965, revision of DOD Directive 3200.9. The sessions are planned to consist of about two hours of presentations with interspersed films, followed by one hour of questions and answers as follows:

Film: Dr. Harold Brown, Director of Defense Research & Engineering—The Intent of Contract Definition.
Presentation: Dr. J. Sterling Livingston, Peat Marwick Management Systems Co.
Film: DOD/Industry Panel Discussion.
Films: DOD and Industry Project Managers' First-hand Experience with Contract Definition.
Answers to Questions from the Floor: Mr. James W. Roach, Office of the Director, Defense Research & Engineering.

II. Middle Management Orientation.

These sessions (approximately three hours each) are intended to provide *indoctrination* only, not in-depth training. The indoctrination will be oriented primarily to the middle management group, including personnel in project management offices.' Attendance for each session will be limited to 100 (50 Government and 50 industry). Content of each session will be similar to that of the Top Management Indoctrinations but oriented primarily to the project manager and his immedaite staff. The presentation will be by members of the Peat Marwick Management Systems Company Staff. Questions will be answered by a DOD representative.

III. Instructor Workshops.

These sessions (three days each) will include indoctrination and some training. The purpose of the workshops is to train selected Military Department and industry personnel as instructors qualified to lead future workshop sessions for working-level personnel involved in Contract Definition. Each workshop will be limited to 90 participants. Each session will include the material used in the Middle Management Orientations augmented by case studies. The workshops will be led by members of the Peat Marwick Management Systems Company staff.

Schedule for Indoctrination Program.

Top Management Session No.	*Date*	*Location*
1 & 2	Aug. 17, 1966	Washington, D. C.
3	Aug. 18, 1965	Washington, D. C.
4 & 5	Aug. 20, 1965	Los Angeles, Calif.
Middle Management Session No.		
1 thru 4	Aug. 23–24, 1965	Los Angeles, Calif.
5 & 6	Aug. 26, 1965	Menlo Park, Calif.
7 & 8	Aug. 30, 1965	Washington, D. C.
9, 10, 11	Aug. 31 & Sept. 1, 1965	Washington, D. C.
12 & 13	Sept. 2, 1965	Fort Monmouth, N. J.
14 & 15	Sept. 8, 1965	Boston, Mass.
16 & 17	Sept. 10, 1965	Philadelphia, Pa.
18 & 19	Sept. 13, 1965	Denver, Colo.
20 & 21	Sept. 15, 1965	Dallas, Tex.
22 & 23	Sept. 17, 1965	St. Louis, Mo.
24 & 25	Sept. 20, 1965	Dayton, Ohio
26 & 27	Sept. 22, 1965	Detroit, Mich.
28 & 29	Sept. 24, 1965	Huntsville, Ala.
Instructor Workshop No.		
1	Sept. 27–29, 1965	Washington, D. C.
2	Oct. 4–6, 1965	Los Angeles, Calif.
3	Oct. 11–13, 1965	Washington, D. C.

(*Continued on page 14*)

Management in Army Materiel Command

by

General Frank S. Besson, Jr., U.S.A.

Management in the United States Army Materiel Command (AMC) is largely conditioned by today's environment. Within the span of two decades, the Army, Navy, Air Force and Marines have made tremendous forward strides in organization, tactics, equipment, weapons and mobility. Each Service has adapted itself successfully to great technological developments which, in recent years, have radically changed almost every aspect of war.

Cavalrymen have overcome conviction and sentiment to become exponents of armored warfare. Today's artillerymen are concerned with guided missiles and rockets and the infantryman is adding another chapter to the Army's mobility history as he applies advanced air assault concepts.

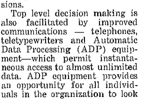
As in the tactical and strategic environments, today's Army is also concerned in the logistical area with modern management practices and concepts. Because waste or inefficiency in the employment of money, materiel or manpower is directly reflected in reduced combat power, the newest tools and principles of management are required to insure maximum operational efficiency.

The logistical management task in AMC is one of administering a huge, complex administrative and service apparatus —one meshed with a huge civilian industrial complex — all aimed at supporting the fighting soldier with the best weapons and equipment that American ingenuity can devise.

This task has always posed difficult challenges to the military logistics manager, but the current environment has broadened the scope of these challenges considerably. We are faced with a dynamic technology —one which has dramatically changed in the last 30 to 40 years. Everything moves faster —particularly in the military domain. The tools of today are not adequate for tomorrow's tasks.

One of the forcing elements in obsoleting the management practices of this modern age is "time-shorted" travel or shrinking geography. One can travel from coast to coast today in a matter of three to four hours. The result is little decentralization of broad delegations of authority, and ignorance of what is happening with the delegated authority for weeks and months. Eyeball to eyeball confrontation is the order of the day for all management reviews and decisions.

Top level decision making is also facilitated by improved communications — telephones, teletypewriters and Automatic Data Processing (ADP) equipment—which permit instantaneous access to almost unlimited data. ADP equipment provides an opportunity for all individuals in the organization to look at the same information at the same time. In the optimum condition, the information that top management receives is distilled from the same fragments of information used at the lower echelons. Information is cast in the same time frame, which for all practical purposes is immediate or real.



General Frank S. Besson Jr., USA
Commanding General
U. S. Army Materiel Command

As a result of improved transportation and communications techniques, important decision making gravitates to the top. This is a trend which is not only common in the military but is one which is found in industry too. With improved communication, and with the ability to obtain real-time information by ADP, more and more top managers make the important decisions. Decisions are made at the top and the implementation of those decisions is then decentralized.

At the mid-management level —the level at which the Army Materiel Command operates— what is the response to this situation, where broad delegations of operating authority are decentralized, but where important decision making is reserved to the highest echelons?

From the initial establishment of AMC, it was obvious that it was necessary to know who was to give orders, and who was to take orders. My primary responsibility was to fix responsibility.

Additionally, an honest effort was made to encourage initiative in subordinates by decentralizing authority. In this effort more authority was given to the Project Managers, for example, in managing AMC's most important projects than anyone dreamed possible—perhaps more than was intended initially—but the favorable results so far have more than justified the action.

A recent statement by General Harold K. Johnson, the Army Chief of Staff, to the effect that until an individual has been proved wrong he should be trusted, is the key to AMC's policy in delegating authority. Line authority is accentuated and staff authority is concentrated on programming, scheduling and after action review rather than on defensive type, time-consuming approval of individual stepping-stone actions. Subordinates are trusted and capable personnel are "stretched out" by demanding assignments.

Our attitude is designed to encourage a sense of urgency and it was never more necessary than now. We look for bold action and encourage visibility. Individuals with responsibility are to be visible to everyone; and I want each to know that, in carrying out his duties, he is free to communicate with anyone, horizontally and vertically, both within and without AMC. In short, I want everyone who does business with AMC to know that AMC Commodity and Project Managers are actually *responsible* for their projects.

In essence, we are attempting to manage by exception. This is not as difficult as it would first appear, since everyone from the top echelon down, given today's dynamic technology, has a pretty fair grasp of progress—or more importantly—lack thereof.

Speaking of the top echelons, the Commanding General of AMC reports directly to the Army Chief of Staff. He also receives broad policy guidance from the Assistant Secretary of the Army for Installations and Logistics on procurement and from the Assistant Secretary of the Army for Research and Development on research and development programs. The Deputy Chief of Staff for Logistics supervises AMC's Procurement of Equipment and Missiles, Army (PEMA), Army Stock Fund (ASF) and Operations and Maintenance, Army (O&MA) funds; the Assistant Chief of Staff for Force Development and the Chief of Research and Development also supervise AMC operations in their particular areas of responsibility. Resources—money and manpower—come from the Comptroller of the Army and the Deputy Chief of Staff for Personnel. It is AMC's management task to take all of the policy guidance, direction and resources, and meet the Army's materiel requirements.

On any measurement scale, AMC's task is a huge one. It is responsible for annual expenditures of about $9 billion. In addition, AMC supports an inventory of weapons and equipment estimated to be worth $21 billion, of which about half is in the hands of troops. Currently, 169,362 personnel—of which 18,000 are military—are employed by AMC. This current strength represents an overall reduction of approximately 20,000 people since AMC began operations in August 1962.

Installation cutbacks and consolidations show a similar reduction—from a peak of 278 local and regional installations and activities in August 1962 to 205 at the present time.

Although there have been a number of internal reorganizations and restructuring since 1962, AMC's major command structure consists of seven major subordinate commands responsible for providing the weapons and equipment required by the Army to move, shoot, see and communicate.

Movement is handled by the Mobility Command in Warren, Mich., with three commodity centers: the Army Tank-Automotive Center in Warren, Mich.; the Aviation Materiel Command, St. Louis, Mo.; and the Mobility Equipment Center, also in St. Louis. Shooting is a function of three commands—the Weapons Command at Rock Island, Ill.; the Munitions Command at Picatinny Arsenal, N. J.; and the Missile Command at Huntsville, Ala.

Communications is primarily the responsibility of the Electronics Command at Fort Monmouth, N. J. Seeing—battlefield surveillance—is a shared responsibility of both the Mobility and Electronics Commands.

This commodity-oriented concept has also brought into being the vertical Project Management concept. Since many modern weapons programs can and do call for the expenditure of hundreds of millions and even several billions of dollars, and consume from five to 10 years in the life cycle, they are, in effect, established as separate "profit centers" within the corporate body of the Defense Department.

Within AMC we have 41 such organizations at the present time for programs of high criticality because of cost, military significance or other emphasis. Basically the Project Manager is an authoritative manager, completely oriented towards a specific piece of hardware. From an information or data processing point of view, it amounts to the establishment of a separate ledger account for all transactions related to the particular system.

Project Managers in AMC manage their projects, operating within the total money and other resources given them. They direct 48% of AMC's research and development expenditures, and nearly 55% of its production expenditures. Thus, they may exert their influence upon an item throughout development and procurement. Although there are some exceptions, Project Managers generally have entered the picture by the time the development stage is reached, and then follow the item through successful procurement and fielding of the system.

In managing, when it is possible to obtain data in quantity, and have the elements of this data all the same but packaged in various ways, it behooves the manager to look over his operations in different ways. Generally speaking, AMC's operations can be divided into three major management categories: command management, program management and what might be called qualitative control of management practices.

Command management is exercised through the commodity commands and the 41 Project Managers. Program management at the AMC level is functionally oriented toward research, development, procurement, supply and maintenance. This is the way the Army staff is organized and hence AMC is not in a position to stratify its management along the force structure lines identified in the DOD "Force Structure and Financial Plan."

From a qualitative control standpoint, the activities of AMC are observed from almost every angle. AMC renders 489 recurring reports, which are widely distributed and cover almost every segment of our operation. Cost Reduction, Small Business, Quality Control, General Accounting Office Reports, Equal Employment Opportunities, Distressed Area Set-Asides, Obligation Rates, Plant Utilization, Technical Data Standardization, Maintenance Standards and Work Measurement are but a few of the myriads of qualitative programs which are "stove piped" into AMC to accelerate management improvement.

I have no quarrel with these managerial assists. To the contrary, I find they are of extreme value in helping my staff and to continually improve our operations. All of these independent spotlights on separate facets certainly facilitate management by exception, because errors and downward trends are quickly highlighted.

As in all our efforts, management objectives are designed to further the AMC mission—to efficiently, economically and effectively provide the soldier in the field what he needs to do his job, whenever and wherever it is required. In this effort, AMC is continuing to seek maximum cooperation of industry in keeping the Army informed as to industry capabilities, problems and achievements as they affect the military. In turn, AMC is exploring new techniques to provide industry with even greater understanding and appreciation of the many factors involved in developing and providing the necessary materiel support to the user. AMC is convinced that this mutual cooperation is the keystone to maintaining an adequate national defense.

ABOUT PEOPLE

DEPARTMENT OF DEFENSE

Mr. **Robert N. Anthony**, 48, has been named to take over the post of Assistant Secretary of Defense (Comptroller), relieving Charles J. Hitch. Mr. Anthony's primary responsibility in the new job will be preparation and administration of the annual Defense Department Budget. For the past year, Mr. Anthony has served as consultant to the Assistant Secretary of the Navy for Financial Management. He is a professor of Business Administration and a member of the faculty of the Harvard University School of Business.

Mr. **Alain C. Enthoven**, 35, who is presently serving as Deputy Assistant Secretary of Defense (Systems Analysis), will remain in this post when it is upgraded to the status of Assistant Secretary of Defense (Systems Analysis). With the promotion, Mr. Enthoven will take on part of the functions now performed by the Assistant Secretary of Defense (Comptroller). Prior to Mr. Enthoven's appointment to his present job in October 1962, he was an economist with the Rand Corporation.

Dr. **Richard D. Holbrook**, Vice President, Defense Research Corp., Santa Monica, Calif., has been appointed Dir., Advanced Research Projects Agency Research & Development Field Unit, Thailand. He succeeds Col. Thomas Brundage, USMC (Ret.)

Dr. **N. F. Wikner**, nuclear physicist with General Dynamics Corp., has been appointed Scientific Assistant to the Dep. Dir., Scientific, of the Defense Atomic Support Agency (DASA); Mr. **Peter H. Haas** has been named Dep. Chief of DASA's Radiation Div.

Brig. Gen. **Russell E. Dougherty**, USAF, has been assigned as Dir. European Region, in the Office of the Asst. Secretary of Defense (International Security Affairs).

ARMY

Mr. **Stanley R. Resor**, 47, was sworn in as Secretary of the Army on July 7 relieving Stephen Ailes, who resigned from the position on July 1. The new secretary served as Under Secretary of the Army from April 5, 1965 until July 1, when he was designated as Acting Secretary of the Army. On July 7, his appointment as head civilian in the Army Department became permanent. Mr. Resor is a native of New York City and is an attorney.

Lt. Gen **James L. Richardson, Jr.**, who has been Dep. Chief of Staff for Personnel, has been named Commanding General, Sixth U.S. Army. He succeeds Lt. Gen. **Frederic J. Brown**, who will become Chairman, Army Logistics System Study Group, Office of the Chief of Staff, U.S. Army.

Lt. Gen. **James K. Woolnough**, Dep. Commander in Chief and Chief of Staff, U.S. Army, Pacific, succeeds Gen. Richardson as Dep. Chief of Staff for Personnel.

Succeeding Gen. Woolnough as the Dep. Commander in Chief and Chief of Staff, U.S. Army, Pacific, is Lt. Gen. **Edgar C. Doleman**, formerly Commanding General, I Corps (Group), Korea.

Maj. Gen. **John M. Cone**, formerly Dir. of Quality Assurance, Hq, Army Materiel Command, assumed command of the White Sands Missile Range on Aug. 1. He succeeds **Maj. Gen. J. Frederick Thorlin**, who has retired.

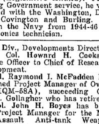
The following staff assignments have been made in the Office of Chief of Research & Development: Col. **Charles M. Young, Jr.**, Chief, Combat Materiel Div., Developments Directorate; **Lt. Col. Howard H. Cooksey**, Executive Officer to Chief of Research & Development.

Lt. Col. **Raymond I. McFadden** has been named Project Manager of Overseer (MQM–58A), succeeding Col. Daniel P. Gollagher who has retired.

Lt. Col. **John H. Boyes** has been named Project Manager for the Medium Assault Anti-tank Weapon (MAW), which is under the control of the Army Missile Command, Huntsville, Ala.

Mr. **David E. McGiffert**, 39, has been appointed to the position of Under Secretary of the Army. He relieves Mr. Stanley R. Resor who became Secretary of the Army July 7. Official date for the assignment has not been set. Mr. McGiffert is now serving as Assistant Secretary of Defense (Legislative Affairs). Prior to joining Government service, he was associated with the Washington, D.C. firm of Covington and Burling. He served in the Navy from 1944-46 as an electronics technician.

NAVY



Mr. **Robert H. B. Baldwin**, 45, a former Naval officer, assumed the duties of Under Secretary of the Navy July 1, 1965. He relieved Kenneth E. BeLieu, who resigned from the job. Prior to his designation as Under Secretary of the Navy, Mr. Baldwin served as a Special Consultant to the Secretary and Under Secretary of the Navy. Before accepting his position with the Navy Department, Mr. Baldwin was with the investment firm of Morgan Stanley & Company, serving as a general partner since 1958.

Adm. David L. McDonald, Chief of Naval Operations, has been appointed for a second two-year term as Chief of Naval Operations.

VAdm. Ray C. Needham has been designated Inspector General, Dept. of the Navy. Prior to this assignment he was Dep. Commander in Chief, Atlantic Fleet.

RAdm. Stephen Sherwood, SC, is the new Dep. Chief, Bureau of Supplies & Accounts. His previous assignment was Commander, Naval Supply Center, Pearl Harbor.

HAdm. Daniel F. Smith, Jr., Chief of the Naval Basic Training Command, Naval Air Station, Pensacola, Fla., has become Commander, Naval Test Center, Patuxent River, Md.

Capt. James W. McConnaughay has been reassigned from duty as Commanding Officer, Naval Air Test Facility (Ship Installations), Lakehurst, N.J., to the Bureau of Naval Weapons as Programs and Laboratories Officer. Succeeding him as Commanding Officer of the Lakehurst test facility is Capt. James C. Lieber.

Capt. H. D. Allen is the new Dep. Commander, Naval Weapons Laboratory, Dahlgren, Va. He relieves Capt. George G. Ball, who will attend the Industrial College of the Armed Forces.

Capt. James R. Payne, formerly Missile Development Officer, Bureau of Naval Weapons, has become Commanding Officer, Naval Weapons Station, Yorktown, Va. Capt. Ben B. Pickett, former commander, has been selected for the rank of rear admiral and has assumed command of the Cruiser-Destroyer Flotilla Twelve.

New Supply Corps assignments: Capt. N. J. Cummings, SC, Special Asst. to Dir., Procurement Div., Office of Naval Material; Capt. J. E. Harvey, Jr., SC, Asst. Chief for Purchasing, Bureau of Supplies & Accounts: Capt., L. G. Maxwell, SC, Officer-in-Charge, Navy Purchasing Office, New York, N.Y.; Cdr. J. L. Forchand, SC, Dir. Purchasing Div., Navy Electronics Supply Office, Great Lakes, Ill.

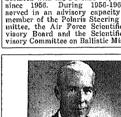
AIR FORCE

Maj. Gen. Glen W. Martin has been nominated for promotion to lieutenant general and assignment as The Inspector General, USAF. Lt. Gen. William K. Martin, presently The Inspector General, is being reassigned as Commander, Fifteenth Air Force, SAC, effective Sept. 1. General Martin will replace Lt. General Archie J. Old, Jr., who will retire Aug. 31.

Maj. Gen. J. Francis Taylor Jr., formerly Dir., Command Control & Communications, Hq., USAF, has assumed command of the Air Force Communications Service, Scott AFB, Ill.

Brig. Gen. Guy H. Goddard has been assigned as Dep. Dir. for Construction, Hq., USAF; Brig. Gen. Oran O. Price, has been assigned as Civil Engineer, Air Force Logistics Command, Wright-Patterson AFB, Ohio.

Dr. Harold Hrown, 37, Director of Defense Research & Engineering since 1961, has been designated by President Johnson as the new Secretary of the Air Force. He will relieve Eugene M. Zuckert, who announced his resignation last month, on Sept. 30. Dr. Brown has been directly associated with the Defense Department since 1956. During 1956-1961 he served in an advisory capacity as a member of the Polaris Steering Committee, the Air Force Scientific Advisory Board and the Scientific Advisory Committee on Ballistic Missiles.



Mr. Norman S. Paul, 46, will relieve Dr. Brockwny McMillan as Under Secretary of the Air Force on Sept. 30. From 1955 to 1960, Mr. Paul was with the Central Intelligence Agency. In 1961 he was appointed assistant to the Secretary of Defense for Legislative Affairs and in July 1962 he was appointed to his present position as Assistant Secreary of Defense for Manpower. Mr. Paul is a former Naval officer and is a 1940 graduate of Yale University.

The following are new assignments on the Air Staff, Hq., USAF: Col. William C. Pratt, Director of Data Automation; Col. Charles R. Gregg, Dep. Dir. of Data Automation.

Col. Robert P. Daly has been assigned as Dep. Dir. for Procurement, Air Force Logistics Command, Wright-Patterson AFB, Ohio.

New assignments at Electronics Systems Div., AFSC, Hanscom Field, Mass.: Col. David W. Pearsall, Dep. Commander for Advanced Planning; Col. Bryce S. Moore, Chief, Procurement & Production Office.

New Director of Small Business Liaison Staff Appointed

The Small Business Administratio has announced the appointment (Mr. Ralph F. Turner as Director (the Small Business Government Lia son Staff for all Government agencie including the Defense Departmen Mr. Turner, formerly Assistant Dep uty Administrator for Procuremen and Management Assistance, succeed Mr. Ted G. Waale, who is retiring.

Army, Air Force Announce New ROTC Scholarship Program Awards

The Army recently announced th names of 400 high school graduate who have won the first four-yea scholarships to be given by the Arm to college and University ROTC pro grams. In July the names of 60 ROTC college students who won tw year Army scholarships starting wit their junior year in college this fal were listed. Both the four-year an the two-year scholarships, which ar authorized by the ROTC Vitalizatio Act signed by the President on Oc 13, 1964, will pay for tuition, text books and fees, and provide the re cipient with a subsistence allowanc of $50 a month for the duration o his award. The scholarship winner will join thousands of other colleg freshmen entering the ROTC progra this fall—a program that provide approximately 85% of the officer in put needed by the Army each yea Some 11,800 ROTC graduates fro 247 ROTC colleges and universitie are being commissioned this year a second lieutenants in the Regula Army or the Army Reserve. The Ai Force has announced that 976 ROT cadets will receive final two-yea scholarships with benefits similar t the Army Program. AFROTC is i 185 colleges and provides approxi mately 4,500 new officers each year.

DOD Pursues Active Program to Assist Small Business and Labor Surplus Areas

The Defense Department is actively seeking to increase the participation of small business and labor surplus area firms through an aggressive program conducted by the Directorate for Small Business and Economic Utilization Policy. This office is under the direction of Albert C. Lazure, former General Counsel for the Ordnance Corps, and a lawyer with more than 25 years of military procurement experience.

Located under Deputy Assistant Secretary for Procurement, John M. Malloy, in the Office of the Assistant Secretary of Defense (Installations & Logistics), Paul R. Ignatius, the Directorate has developed a six-point program to implement the small business and labor surplus area policies contained in the Armed Services Procurement Regulation (ASPR). The provisions of ASPR incorporate the national policies expressed in the Armed Services Act of 1947, the Small Business Act of 1958, Defense Manpower Policy #4 as issued by Office of Engineering Planning and current DOD appropriation acts.

Fundamentally, it is the intent of the Congress and the Executive that a fair proportion of the total purchases and contracts for supplies and services for the Government shall be placed with small business concerns and that encouragement shall be given to the placing of contracts and facilities in areas of persistent or substantial labor surplus and to assist such areas in making the best use of their available resources.

The DOD (Installation & Logistics) Secretariat, through its Small Business and Economic Utilization Policy Directorate, transmits operating and policy guidance to the more than 600 full and part-time Small Business and Labor Surplus Specialists at military procurement offices throughout the country. Ths is done through the ASPR and through the Small Business/Labor Surplus Area (SB/LSA) advisors to the Assistant Secretaries of the Army, Navy, Air Force and DSA. Jack W. Askins of the Army, Morris M. Questal in the Navy, Thomas H. Casey and Edward J. McMurray of the Air Force, and Julian Ross and C. F. Cinqiegrana of DSA direct small business and labor surplus activities in their particular agencies.

To increase the participation of these firms in the defense market place, a six-point program has been designed to discover and utilize new sources for both prime and subcontracting opportunities, to make maximum use of preference "set-aside" procedures, to publicize defense business opportunities and to join in special projects having social or economic implications for DOD procurement functions.

The program in brief is as follows:

Prime Contractor Source Development and Utilization.

Dovetailing with Defense policies of increasing competition wherever possible, this program seeks out, screens and solicits firms for Invitation for Bid (IFB) and Request for Proposal (RFP) actions. Follow-up is then initiated to insure that interested and qualified firms are maintained on aproppriate bidders' lists and that they are afforded an equitable opportunity to compete on procurements for which they are qualified.

Assistance is offered by the Small Business Administration through its programs for referrals, surveys for certificates of competency and credit and loan programs. The Department of Commerce, through the *Commerce Business Daily*, synopsizes procurement invitations, subcontracting leads, contract awards and other business opportunities.

Activities

Sections 1–700 and 1–800 of ASPR provide for the "partial" or "total" set-aside of certain procurements for small business and labor surplus area concerns. Small business set-asides may be "partial" or "total" (100%), while labor surplus area set-asides may be only "partial." Total set-asides of individual procurements or a class of procurements is authorized if there is reasonable expectation of bids or proposals from a sufficient number of responsible small business concerns so that awards can be made at reasonable prices.

Partial set-asides may be utilized for small business or labor surplus area firms if the proposed "buy" can be divided into segments each constituting an economic production run. The procurement is then divided into a non-set-aside portion open to all bidders and a set-aside portion open only to small business or labor surplus area concerns as the situation may warrant. Firms interested in the set-aside portion must also bid on the non-set-aside portion.

After awards have been made on the non-set-aside portion, negotiations are then conducted for the set-aside portion with the eligible small business or labor surplus area bidders to determine if they will meet the award price of the non-set-aside portion. Negotiations are conducted only with those responsible bidders or offerors who have submitted responsive bids or proposals on the non-set aside portion at a price no greater than 120 per cent of the highest unit price awarded on the non-set-aside portion.

The order of priority for those within the 120 per cent range in the conduct of small business or labor surplus area set-asides negotiations is as follows:

Priority Groups	Small Business Set-Asides	Labor Surplus Set-Asides
1	Small Business concerns which are also persistent labor surplus area concerns.	Persistent labor surplus area concerns which are also small business concerns.
2	Small Business concerns which are also substantial labor surplus area concerns.	Other persistent labor surplus area concerns.
3	Small business concerns which are not labor surplus area concerns.	Substantial labor surplus area concerns which are also small business concerns.
4		Other substantial labor surplus area concerns.
5		Small business concerns which are not labor surplus area concerns.

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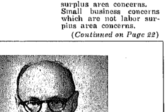

Mr. Albert C. Lazure, Director of Small Business and Economic Utilization Policy in the Office of Asst. Secretary of Defense (Installations & Logistics). Mr. Lazure has the responsibility to assure continuing Defense-wide application of policies and practices designed to aid labor surplus areas consistent with procurement objectives and without the payment of price differentials.

The Increase Reliability Operational Systems Program

by
George S. Peratino
Assistant for Reliability Matters
Office of Dep. Chief of Staff (Systems & Logistics)
Headquarters, U.S. Air Force

The Air Force has initiated a program called IROS (Increase Reliability of Operational Systems) in an attempt to reach a higher degree of reliability in equipment and systems already in operational use. The participation of industry across the board will be needed to provide replacement parts and development of improved components as problem systems, subsystems and equipment are identified.

How IROS Evolved.

Initially, the management procedures established to implement reliability policy on systems were applied to systems in the conceptual, definition or acquisition phase. Air Force Regulation 375-5, "Reliability Program for Weapon Support, and Command and Control Systems," dated Oct. 17, 1960, supplied the impetus required to initiate a full scale attack on unreliable systems. This document was the first service regulation to contain reliability policy.

After having attained a satisfactory level of reliability on systems in development and production, attention was focused on those systems in the operational inventory which were developed prior to the issuance of Air Force reliability policy and management procedures and on those systems designed during the late 1950's, many of which will be in use for a long time.

Lieutenant General Thomas P. Gerrity, Deputy Chief of Staff, Systems & Logistics, Headquarters, USAF, concerned about this problem, directed the establishment of a program to increase the reliability of systems in the operational inventory. Responsibility was delegated to the Office of the Director for Procurement Policy.

An Air Force team, under the direction of the Air Staff focal point for reliability matters, was established to undertake the assignment. The team included representatives from Headquarters, Air Force Systems Command (AFSC); Headquarters, Air Force Logistics Command (AFLC); and the Directorates of Maintenance Engineering and Procurement Policy, Headquarters, USAF.

The program, designated IROS, became official on March 18, 1965, when Air Force Regulation 400-46, outlining the program, was issued.

Program Objective.

Through failure data and mathematical models, IROS will identify problem areas existing in current systems, subsystems and equipment. It will test these "weak links" to determine the interrelationship of environment, test equipment, technical orders, design and maintenance skill level.

Where cost effectiveness considerations justify, component improvement programs will be instituted.

Since the objective of the IROS program is to increase reliability of operational systems, Air Force activities are required to:

- Apply necessary resources to review and analyze the current reliability of operational systems.
- Analyze electric data processing printouts to identify areas suspected of having low reliability.
- Recommend corrective actions to increase operational reliability of Air Force systems.

Command Responsibilities.

AFLC will play the major role in the IROS progra since the command has engineering responsibility for systems in the operational inventory. The IROS program a AFLC is under the direction of the reliability manage Mr. Frank J. Ruther.

AFLC management procedure at the Air Materiel Are level will include monthly reliability status reports prepared for each system. The reports will contain hardwar reliability trends for each operational system over period of six months. Additional graphical trend data wil be included to portray "alert availability," "unschedule maintenance analysis," "before flight" and "flight hardware reliability," and "objective reliability."

The report will include a detailed diagram showing th mean time between failure (MTBF) for each system an the major subsystems which have a low MTBF. The bloc diagram will be expanded in these areas only to pinpoin the equipment whose MTBF is low.

Headquarters, USAF, and Headquarters, AFLC, wil review the system block diagrams with representative of the cognizant operating commands to direct furthe effort by the AMA's in pinpointing specific items that ar highly unreliable. When the items are uncovered, th AMA will determine whether substitute parts with highe reliability are available for substitution into existing equipment. When items are not available, programs mus be initiated to develop highly reliable parts for substitution into Air Force equipment. In each case, cost effectiveness studies will be initiated to determine the feasibility of changing the design.

Factors to be considered in making the determinatio are:

- Cost of replacing the unreliable items.
- Cost of modification.
- Cost of development programs to obtain highly reliable substitute items.
- Projected life of the system in the operational inventory.
- Reduction of the logistics support cost during the remaining life of the system.

No modification program will be undertaken unless savings result to the Air Force or the tactical capabilities of the system are increased enough to assure performance of its assigned missions.

When adequate data is not available at the AMA level to decide whether the operational reliability of the equipment is adequate, a suitable testing program will be established to obtain a higher degree of confidence in the operational reliability value.

AFSC will establish those programs necessary to meet the mission requirements of systems for which the command has Air Force engineering responsibility. In addition, AFSC will establish component improvement programs with the systems program to eliminate high-failure-rate and manhour consumer items. It will provide engineering support for the IROS program when requested by AFLC and the operating commands.

Air Force operating commands will develop a summary of the operational and maintenance concept changes for each of their systems. They will establish appropriate analytical models to pinpoint areas of low reliability. In conjunction with AFLC and AFSC they will determine the minimum acceptable reliability level and the desired reliability goal for each operational system. The operating commands will recommend priority of actions based upon mission requirements and current availability of Air Force systems.

Air Force-Industry Cooperation.

An important factor on which the success of the IROS Program will hinge is the support of industrial organizations. Many reliable replacement items are available today for immediate insertion into the operational systems. However, many more will be required. Industry must gear its operations to meet this new challenge. As reliability information on the operational systems becomes available to the Air Force, industry will be advised. Thus industry actions to improve the reliability of their products to meet the program needs can be carried on parallel with Air Force actions to obtain approval and funding to support development of reliable replacement items.

SPEAKERS CALENDAR

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OCTOBER 1965

OFFICE OF THE SECRETARY OF DEFENSE

Hon. Cyrus R. Vance, Dep. Secretary of Defense, at National Security Industrial Assn. Annual Dinner, Washington, D C., Oct. 7.

ARMY

Gen. Harold K. Johnson, Chief of Staff, at presentation of Eisenhower Trophy, 20th Annual Armed Forces Benefit Football Game, Chicago, Ill., Sept. 3 (Appearance only).

Maj. Gen. John J. Lane, Commander, Military Traffic Management & Terminal Service, at Advanced Traffic Management Class, Fort Eustis, Va., Sept. 13; at Annual Transportation & Logistics Forum, Detroit, Mich., Sept. 27.

Hon. Willis M. Hawkins, Asst. Secretary of the Army (Research & Development), at American Chemical Society meeting, Atlantic City, N. J., Sept. 14.

Maj. Gen. G. V. Underwood, Jr., Chief of Information, at Minnesota Chapter of Public Relations Society of America, Minneapolis, Minn. Sept. 16; at National Guard Assn. Public Information Workshop Panel, Miami, Fla., Sept. 28.

Lt. Gen. William W. Dick, Jr., Chief of Research & Development, at Optical Manufacturers Assn. meeting, Grossinger, N. Y., Sept. 23.

NAVY

Adm. David L. McDonald, Chief of Naval Operations, at American Legion national convention, Portland, Ore., Aug. 25; at Fleet Reserve Assn. national convention, Miami, Fla., Sept. 14.

Hon. V. M. Longstreet., Asst. Secretary of the Navy (Financial Management), at Armed Forces Management Assn. annual meeting, Washington, D. C., Sept. 1; at Bureau of Naval Weapons Financial Management conference, Norfolk, Va., Oct. 7.

RAdm. P. Corradi, CEC, Chief, Bureau of Yards & Docks, at Society of American Military Engineers meeting, Fort Belvoir, Va., Sept. 8.

VAdm. Paul Ramsey, Dep. Chief of Naval Operations (Air), at General Electric Co. Management Assn. dinner, Lynn, Mass., Sept. 14.

Gen. Wallace M. Greene, Jr., Commandant, U. S. Marine Corps, at Defense Supply Assn. annual convention, Washington, D. C., Oct. 20.

AIR FORCE

Gen. B. A. Schriever, Commander, Air Force Systems Command, at Management Conference, Los Angeles, Calif., Sept. 28; at Space Electronics Symposium, Miami, Fla., Nov. 3.

Lt. Gen. W. A. Davis, Vice Commander, Air Force Systems Command, at Systems Effectiveness Conference, Washington, D. C., Oct. 19.

How to Request A Classified Visit

When contractor representatives wish to arrange visits to DOD agencies in the Washington, D. C., area that involve disclosure of classified information, it is essential that a request be sent to the specific office or activity within the agency that is to be visited. Paragraph 40c of the DOD Industrial Security Manual contains instructions for the preparation of such visit requests.

Sending a visit request, for example, to the Chief of Naval Material or the Commander, Air Force Systems Command, would not be specific enough to insure that it reaches the intended recipient in advance of the proposed visit. Whenever possible, contractors should find out the exact code number or office symbol, division, branch, etc., of the activity or office to be visited, and the request should be addressed accordingly. By so doing, contractors will have better assurance that their requests will be promptly routed to the right place.

Col. J. S. Cogswell, USAF, Heads New Industrial Security Office

Colonel James S. Cogswell, USAF, became the first chief of the Office of Industrial Security established at Headquarters, Defense Contract Administration Services (DCAS), of the Defense Supply Agency, on June 30, 1965. The establishment of the new Office of Industrial Security represents the consolidation of more than 100 different offices of the Army, Navy and Air Force which had security cognizance over industrial plants handling defense contracts.

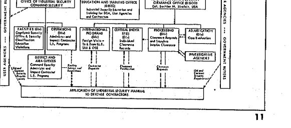
In the reorganization, the 11 DCAS regions, now being established throughout the country, will have single supervision with uniform policy and regulation.

Security clearance of defense contractor employees are centrally processed at the Defense Industrial Security Clearance Office (DISCO), located within the facilities of the Defense Construction Supply Center, 3990 East Broad Street, Columbus, Ohio 43215. Defense contractors now deal directly with DISCO on all personnel clearance matters.

"We establish the requirements, and the contractor develops his procedures and carries them out," states Colonel Cogswell. "We then inspect and look for shortcomings in the security program. If espionage is suspected, it is handed over to a service investigative agency, which in turn usually gives the case to the FBI since it has primary jurisdiction."

Noting that it is difficult to have total security, especially where the human element is concerned, Colonel Cogswell recalls an incident that occurred when a contractor placed his brief case filled with classified material on the top of a cab as he paid the driver. He looked up to see the cab move off with his prized possession while he was busy counting his change.

A common cause of security violation is inter-industry rivalry. Government classified material can be compromised through firms competing for trade secrets, processes, formulas and marketing intelligence.


DEFENSE SUPPLY AGENCY - INDUSTRIAL SECURITY PROGRAM - OPERATIONS
OFFICE OF INDUSTRIAL SECURITY Chief, Col. James S. Cogswell, USAF
Operational Management
Program Guidance (OIS)
DCASRs OFFICE OF INDUSTRIAL SECURITY COMMAND SECURITY
DEFENSE INDUSTRIAL SECURITY EDUCATION AND TRAINING OFFICE (DISEO) Industrial Security Education and Training for DSA, User Agencies and Contractors
DEFENSE INDUSTRIAL SECURITY CLEARANCE OFFICE (DISCO) Col. Lachlan M. Sinclair, USA
FACILITIES (Div) Cognizant Security Office & Security Classification Education Violations
OPERATIONS (Div) Administer and Inspect Contractor I.S. Programs
INTERNATIONAL PROGRAMS (Div) Foreign Visits - To & From U.S. SAA & OSE
CENTRAL INDEX FILES (Div) Individual Clearance Records
PROCESSING (Div) Clearance Requests and Transfers Interim Clearance
ADJUDICATION (Div) Case Evaluation
INVESTIGATIVE AGENCIES
DISTRICT AND AREA OFFICES Command Security Administer and Inspect Contractor I.S. Programs
Facility Surveys and Inspections
Contractor Requests
Clearance Verification
Clearance Requests
List and Contract Security Requirements
USER AGENCIES --- GOVERNMENT BUYERS
APPLICATION OF INDUSTRIAL SECURITY MANUAL TO DEFENSE CONTRACTORS

NOTES FOR EDITORS

Briefed below are some events and projects within the Department of Defense which may be of interest to writers and editors. If further information on any of these topics is desired, please write to Chief, Magazine and Book Branch, Office of the Assistant Secretary of Defense, Public Affairs, Washington, D.C. 20301.

DOD SAVES $4.6 BILLION IN FY 1965

The Defense Department Cost Reduction Program saved $4.6 billion during FY 1965. The savings were some $2.1 billion more than previously estimated. As a result, the annual savings goal for FY 69 and each year thereafter will be set at $6.1 billion. The program has permeated all levels of management in the Defense Department and is now widely accepted in defense industry. The DOD effort to provide required military strength at the lowest possible cost has three parts: (1) buying only what is needed to achieve balanced readiness, (2) buying at the lowest sound price and (3) reducing operating costs through termination of unnecessary operations, standardization and consolidation. In a tri-service switch of excess equipment, Secretary of Defense McNamara said the Army acquired excess Air Force missile targets, saving more than $.5 million; the Air Force acquired 1,200 Sparrow missiles excess to the Navy, saving $39 million and the Navy acquired 125 excess Bomarc missiles as target drones from the Air Force for a savings of almost $10 million over a three-year period.

NAVY TO ACTIVATE FIRST HOSPITAL SHIP SINCE KOREA

The Navy has announced that the hospital ship REPOSE is being reactivated at Hunter's Point Division, San Francisco Bay Naval Shipyard. No firm date has been set for her recommissioning. REPOSE will be the first hospital ship in operational use by the Navy since shortly after the Korean action ceased. Other ships being commissioned are the landing ships rocket (medium) CLARION RIVER, SAINT FRANCIS RIVER and WHITE RIVER; the inshore fire support ship CARRONADE; and KULA GULF, an aircraft ferry.

NEW V/STOL AIRCRAFT DELIVERED

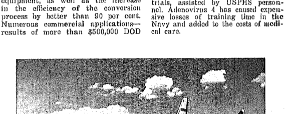
LTV Aerospace Corp. of Dallas recently delivered the first of five XC-142A tri-service V/STOL transports—tilt-wing, deflected slipstream aircraft which can operate vertically from small clearings and fly conventionally at speeds of more than 430 MPH. The XC-142A will go into a test and evaluation program at Edwards AFB, Calif., under rugged field conditions such as might be encountered in a combat area.

DOD RESEARCH STIMULATES COMMERCIAL PRODUCTS

The Defense Department spends more than $7 billion annually on research. A major effort is being made within DOD to disseminate to industry information learned from this research. For example, the three services collectively have spent about $10 million on eye protection systems. A direct result of this research is a new product on the market this year: photochromic sunglasses. In another case, infrared detection equipment has been adapted by the Forestry Service to demonstrate its capability in detecting forest fires. A third example is the appreciable reduction of the size and weight of power conversion equipment, as well as the increase in the efficiency of the conversion process by better than 90 per cent. Numerous commercial applications—results of more than $500,000 DOD research—are in portable television and radio sets. There is available information detailing more than 25 other examples of DOD research spin-off benefits to industry; however, these spinoffs number in the thousands.

NEW LIVE ORAL VACCINE

A successful field trial of a vaccine against adenovirus type 4, the main cause of severe acute respiratory disease in military recruits, has been successfully tested by the U.S. Public Health Service and the U.S. Navy. Taken in the form of a capsule, the vaccine was 100 per cent effective in preventing acute respiratory illness among 135 Marine recruit volunteers at a training camp where adenovirus 4 was epidemic. By contrast, almost 25 per cent of a control group of 132 who had been fed a placebo were hospitalized with severe adenovirus respiratory disease during the same epidemic. The vaccine represents a new concept in immunization. A special coating on the capsule prevents the vaccine from being released until it reaches the intestinal tract. Thus the live vaccine bypasses the normal site of adenovirus infection, the respiratory tract, and causes in the intestinal tract a symptom-free infection that stimulates the production of protective antibodies. Marine Corps training centers at Camp LeJeune and Parris Island conducted the field trials, assisted by USPHS personnel. Adenovirus 4 has caused expensive losses of training time in the Navy and added to the costs of medical care.



The XC-142A, a unique tilt-wing transport aircraft designed to take off and land vertically, is delivered by LTV Aerospace Corp. of Dallas, Tex. for test and evaluation by the Air Force. (See Item 3 Above)

Credit Financing for Military Exports

by
Frank J. Fede, Director, Export Financing Plans
Office of International Logistics Negotiations
Office of Asst. Secretary of Defense
(International Security Affairs)

Almost a third of all sales of military equipment and services abroad in the past four years has been credit financed. This includes sales to industrial countries, such as Italy, the United Kingdom and Australia, as well as to developing countries such as India, Iran and others of the Middle East and Latin America. Credit has been extended by both private and governmental sources. We have received many inquiries from U.S. industry and lending institutions as well as from foreign officials and other Government agencies asking, "How is the credit administered; how do the banks and private companies participate in such credit arrangements, particularly with regard to the loan guaranty provision; and what are the various provisions of the Foreign Assistance Act that pertain to Military Assistance sales and credit financing?"

This article will endeavor to answer these questions and also briefly discuss the proposed legislation for 1965 which would amend the Foreign Assistance Act of 1961, as amended, currently pending in Congress.

Magnitude of Sales.

The average of all military export sales in the 10-year period 1952-61 was about $300 million annually. During the next three years, FY 1962-64, sales jumped to five times the previous average, or over $1.5 billion annually. The four-year total of all sales orders, commitments and options (including the United Kingdom option to buy [illegible]er aircraft from the United States) amounted to [illegible] billion for FY 1962-65. Of this total $2.7 billion, about 30%, was or will be made on credit terms.

Let us examine further the principal methods used in financing such sales, in particular the Military Assistance Program (MAP) credit provisions of the Foreign Assistance Act.

Sources of Financing.

There are three basic sources of financing military export sales, as follows:

Cash. The first and most common form of payment is for cash, either by direct contracts between foreign governments and U.S. manufacturers and lending institutions, or through a Military Assistance Sale (MAS) negotiated between the two governments. Over $6.5 billion, or 70%, of the total $9.2 billion sales orders, commitments and options for FY 62-65 were covered through this means.

Private Banks/Eximbank. Over $2 billion, or 20% of total sales, were made through credit arrangements with private banks or with the Export-Import Bank of Washington.

MAP Credit Account. Approximately $500-$700 million, or less than 10% of all sales, were made through the Military Assistance Credit Account. Section 503 of the Foreign Assistance Act provides the general authority for military sales by the Defense Department and determines eligibility of countries to receive such exports.

Each of the above-mentioned categories will be further reviewed and specific provisions of the Foreign Assistance Act indicated as they pertain to Government sales.

Cash Sale.

The two main provisions relating to cash sales are:

Section 507(a), which provides for sale of defense articles and services, usually by payment in advance or within 120 days after delivery.

Section 507(b), which provides contract authority for new production under "dependable undertaking," meaning that the U.S. Military Departments can contract for new procurement and use the foreign government's payments as and when required to meet contractor payments. This is the source for the bulk of U.S. MAS sales.

Repayments are deposited to a "Trust Account" from which the Military Departments are reimbursed for goods and services rendered.

An amendment to Section 507(b) in 1964 permits short term credit or payment within 120 days after delivery. This is used mainly where a foreign government may encounter legal problems in making payments prior to delivery. Another provision for credit is contained in Section 507(a) whereby payment terms can be extended not to exceed three years after delivery of the defense articles. This credit is seldom used mainly because of the Military Departments' requirements for repayments to replenish such inventories.

The largest U.S. cash customer is the Federal Republic of Germany, which has agreed to consider purchases from the United States in an amount approximating United States defense expenditures in Germany and thus help offset the cost of United States forces there. Other large cash sales have been made to United Kingdom, Australia, France, Italy, Canada and Japan.

Private Banks/Eximbank Credit.

The largest source of credit is from private banking facilities and Eximbank. Terms are usually short to medium, or three to seven years, and at varying bank rates. Historically, banking facilities have been reluctant to extend credit for military export sales because of the risks involved and lack of Government guaranty for such sales. Eximbank combined with MAP credit in 1963 to extend its first military export sale using its own funds. The early maturities were covered by Eximbank, at normal bank rates, and later maturities by MAP Credit at lower interest rates. The second Eximbank sale was made later in 1963 in combination with an Italian banking institution and again utilized Defense government-to-government contract authority plus promissory notes. Eximbank will consider credits for the industrial developed countries.

Private banking facilities have extended credit for military export sales to Iran and India in FY 1965. In both cases, government-to-government agreements were executed prior to extending the line of credit, and the United States Government provided loan guarantees. A major problem in private bank participation in military sales is the 105% limitation by the Federal Reserve Bank on foreign investments based upon 1964 experience. Since military sales to developing countries generally yield the lowest returns and have the softest terms because of the financial status of these countries, banks are inclined to limit such participation.

The main problem of the Defense Department in dealing with banks is selecting or determining the participating bank since this is not normally a function of Defense. In this regard, Treasury and Eximbank are cooperating with Defense to resolve this difficulty.

MAP Credit Account.

The third source of financing is through credit of the MAP Account. Here credit is extended to developing countries unable to obtain financing from usual commercial sources and where such credit is in the "national interest." Credit is made available only after considering the political, economic and military factors involved. Military Assistance (MAP) appropriated funds are initially provided as capital for such credit sales. Reimbursements then become available under Section 508 of the Foreign Assistance Act to finance additional sales. The MAP Account thus becomes a "revolving account" since repayments from such sales are "available until expended solely for the purpose of furnishing further military assistance on cash or credit terms."

An amendment to the Act in 1964 enabled private banking facilities and manufacturers, as well as Eximbank, to participate in Defense sales by providing loan guaranty authority under Section 509(b). This allows U.S. banks and manufacturers to extend credit for military sales to developing countries which DOD may guaranty for 100% of the credit extended, but only obligate 25% of the MAP Account as a "Contingency Reserve" in the event of a default.

National Interest.

The critical question of MAP fund availability centers about the question of need for such credit in the "national interest." Defense policy states that credit funds will be made available for all sales that should be made in our national interest, and that such sales will receive first priority in the availabilities of the Military Assstance appropriation which also provides military grant aid to developing nations. A practical limitation therefore exists within Government since the various programs, whether military sales, grant aid, or AID economic projects, are competing for limited fund availability imposed by the annual Congressional appropriations.

The MAP Credit Account was initiated in 1958 with a capitalization of $85 million from MAP New Obligational Authority for credit sales. Credit repayments, or reimbursements, from sales re-entered the fund and were further obligated for military sales. This fund was adequate until 1962 when MAP Credit sales, together with cash sales, rose sharply. In each subsequent year, the MAP Account was augmented with additional New Obligational Authority, so that by the end of FY 1965 MAP Credit capitalization totaled $225 million. During FY 1966, MAP Organizational Authority of $50 million is expected to be used for new credits that otherwise cannot be funded.

Terms of MAP credit generally are softer than normal bank financing because of the need to make sales to developing countries. Limited availability of the MAP Account results mainly from long term, low interest rates, such as three to 10 years and 0-5% interest charges. Countries realizing MAP Credit sales are mainly in the Middle East, the Mediterranean Area and Latin America.

Defense Loan Guaranty Participation.

Since credit sales of military equipment to developing countries normally cannot be financed without Government guaranty because of political and financial risks involved, private banks and manufacturers frequently ask the Defense Department how they can participate in such credit.

The answer is not easy since among the factors to be considered in extending such loan guaranty are the views of many U.S. Government agencies, including Defense's evaluations by the Joint Staff, Unified Commands, Military Departments, and other staffs. State Department must weigh the political implications. Agency for International Development (AID) must consider the economic and overall U.S./AID impact since it has basic jurisdiction over the Foreign Assistance Act and its administration. Treasury Department must define the balance of payments and other international financial interests involved. It also works closely with Eximbank in credit considerations. Bureau of the Budget, "watchdog of Federal spending," must provide MAP credit apportionment and program approval. Finally, the National Advisory Council (NAC), a joint Government body, must rule upon credit terms and other special conditions in the light of overall Government policies.

All these factors determine what is in the "national interest," and whether a proposed credit sale to a particular country can be guaranteed by the Defense Department to a private bank, contractor or Eximbank. The potential seller or banker must become, or remain, familiar with the territory and markets of the world through his private enterprise and resources. When it appears necessary for U.S. Government guaranty or MAP Credit Assistance to be considered to consummate the military sale in the "national interest," then the manufacturer or lending institution should initiate Government processing by requesting such consideration through the Office of the Deputy Assistant Secretary (International Logistics Negotiations) in the Office of the Assistant Secretary of Defense (International Security Affairs).

Preliminary Steps.

The Defense Department in the final analysis must authorize the credit guaranty, but there are certain preliminary steps which the potential seller or lender should take prior to contacting or submitting such request for Defense action, as follows:

- Determine the market requirement for the defense item.
- Ascertain as much as possible the preliminary assessment of military, political, economic and other factors influencing the "national interest."
- Evaluate the financial status of the country involved and appraise other credit fund availabilities for the proposed sale.
- Determine the foreign government's support for the proposed sale.
- If it is concluded that MAP credit funding should be utilized, in the light of competing demands for such funds and the fact that no other source is available, then action should be initiated by the potential seller or lending institution, either by asking the foreign government to request such credit or by directly approaching the Defense Department. It should be understood that the Defense Department will also ask and require the purchasing government to sign a government-to-government agreement to protect the guaranty.

Procedures involving MAP credit funding are complicated; to describe them otherwise would be deceptive. However, it should be noted that MAP credit sales have increased each year, so that presently there are over $250 million in Accounts Receivable. Additional funding of this account will probably be made because of the increasing requirements, stimulated partly by the phase-out of grant aid assistance and continued need for U.S. credit by developing nations.

The Defense Department is prepared to utilize the combination of financial resources available to finance all credit sales of military export equipment and services in amounts and of a character necessary in our "national interest." Adequate financing is available and can be found in order to meet our international commitments and requirements. Financing can be met through further cooperative Defense/industry/financial team efforts, which are well under way.

Contract Definition

(*Continued from Page* 4)

Contacts for Indoctrination Program.

Industry:	Mr. Paul Newman National Industry Industrial Association 1030 15th Street NW Washington, D. C. 20005
Army:	Mr. Loyal Titus Army Materiel Command Washington, D. C.
Navy:	LCdr. Gordon Jayne Office of Chief of Naval Materiel Washington, D. C.
Air Force:	Maj. James E. Watson, III Air Force Systems Command Andrews Air Force Base Washington, D. C. 20331
Office of Secretary of Defense:	Mr. J. W. Grodsky Office of Director, Defense Research & Engineering Washington, D. C. 20301

FROM THE SPEAKERS ROSTRUM

Honorable Paul R. Ignatius

Excerpts from address by Honorable Paul R. Ignatius, Assistant Secretary of Defense (Installations & Logistics), before DOD-NSIA Technical Information Symposium for Management, Los Angeles, Calif.

* * * * * * * * * *

I wish to direct my comments towards logistic data as an end item; data which we buy from the contractors; data used to support logistic requirements, or for use in systems acquisition and systems management. This type of data is also an important resource to the Department of Defense and industry.

Definitions and Scope of Problems.

The problem of acquiring and managing the items of data that we have purchased is an important problem. . . . Estimates of costs run nearly $2 billion annually! In a broader sense, however, the value is beyond calculation because technical data represents a vital reservoir of engineering knowledge upon which the continued effectiveness of our weapons systems depend. From this standpoint, the problem demands the highest order of management attention we can muster.

To get a rough idea of the magnitude of this problem, think of the pile of paper represented by over 50 million engineering drawings, both old and new, collected in DOD activities and repositories. More millions are being added annually in all shapes and sizes.

How are we to extract needed information from a particular drawing and make it available promptly in support of some military equipment half-way around the world? How do we place the cost to the Government of the whole collection of drawings in proper perspective? How do we know when we have all information needed and avoid acquiring that which is unnecessary? How do we keep our store of knowledge up to date and current with technology? How do we achieve uniformity and avoid duplication of information supporting devices in space, in the air, on the ground and sea, under the sea and, at the same time, make absolutely sure that no vital need is neglected anywhere?

The problem is even more complex. Engineering drawings are only one type of data in our collection. Technical data comes in many more forms, ranging from drawings and sketches to a variety of documents, such as drawings manuals, scientific information, logistics data, design information and configuration management information. Reflecting modern mechanization, new forms such as rolls of microfilm and magnetic tapes are now being employed.

In technical manuals, we inventory about 225,000 titles. These include technical orders and publications covering operation, maintenance and repair of all types and sizes of military equipment. It is interesting to note that a recent study estimated that the total technical manual cost was approximately $400 million annually.

Standardization documents include 35,000 military specifications, standards, qualified products lists, standardization handbooks and bulletins.

Problem Discussion and Status of Solutions.

I believe that the Department of Defense has faced the problem and is attempting to improve the management of all data. We do not know all the solutions, and it will take time and money to unscramble the numerous problems. Three fundamental parameters serve to describe the Defense improvement effort: First, the requirements for data must be explicit. Emphasis must be placed not only on acquiring essential data in a prompt fashion, but also on acquiring only the minimum quantity of data necessary to support the needs of the military services. Second, attention must be given to insure the adequacy of data delivered to the Defense Department. Third, the information contained in the Department of Defense must be readily accessible to the user, whether it be a military or a contractor agency.

Management. One of the significant first steps for improvement was the establishment of a DOD management program for technical data. Until recently data management had been exercised by the Military Departments and their components on an individual basis. Review of the department organization showed that there was neither the requirement nor the mechanics for coordination among the departments. Each had its own concepts and pursued separate ideas of requirements, technical content of documents and methods of handling the information. However, each department has developed data management techniques which show promise. For example, the Air Force was a leader in the development of contractor data acquisition procedures which have been adopted as DOD policy. . . . The Navy was the first to establish and use the data review board. These boards are now established in all Military Departments. The Army was an early leader in exploring and developing techniques for data retrieval, such as the Army Data Retrieval Engineering System (ADRES).

The difference among the Services in handling data are the cause of confusion to you in industry. A lack of uniformity existed which necessitated attention on the part of top management. In addition, a continuing direct coordinating effort with DOD staff elements for the purpose of integrating various programs internally was necessary. . . .

At this point in time, I feel the Department of Defense is looking ahead in the management of technical data.

A DOD policy directive governing the determination of data requirements in the procurement of technical data and information has been issued.

DOD instructions on the overall management of technical data and standardization from exploratory development through production, distribution, use, maintenance and disposal of military items are in effect.

Engineering drawings previously mentioned is a specific area in which improvements are being made. Many of the management steps which have been taken are directed to the better use of drawings. Briefly, some of those efforts are:

- We are stressing the fact that drawings must be adequate for the purpose for which they were intended.
- Contractor quality assurance plans now must include procedures to insure adequacy of data furnished to the government.

- An index of repositories of engineering drawings has been prepared.
- Improvements in mechanized data storage and retrieval systems are being emphasized.

Technical manuals are very important, not only because of the high dollar value, but because of their essential role in providing information for operation and maintenance of our military equipment. We are considering a thorough review of the entire manual program by a recognized publishing house. Our present manual system is over 30 years old without major change.

Price of Data. The cost of data is an unpopular subject, but DOD believes that cost or price of data procured should be known. I assure you Congress also would like to know what it costs. In all truthfulness, wouldn't you as managers in industry like to know? It is difficult to conceive of budgeting for facilities, hardware, people and data for weapons systems without cost estimates. The Department of Defense is preparing a "Derivation of Data Price" policy with the cooperation of industry members. This policy will outline procedures to be used in determining the estimated price of data.

Rights in Data. The controversial problem of rights in data is of such keen interest to Government and industry alike that I have asked Mr. Malloy of my office to discuss this subject later this morning. (See excerpts from Mr. Malloy's speech beginning on this page.)

Deferred Delivery. In the area of data procurement there are a few programs which have been started which will take advantage of the deferred delivery of data concept. This provides for delaying the ordering of data until it is actually needed. This has the dual advantage of allowing the needs to become better defined and avoids cluttering our files with unneeded drawings, many of which are frequently changed.

This policy is being tested on the C–141 program and is planned for application on the F–111. Under this system, we have bought only a small percentage of the drawings we would have bought under former procedures.

Transition of Data from R&D to Production. Another stimulating area for data management is that grey area between the end of the development phase and the beginning of the acquisition or production phase.

One method of preparing the production package is that of executing production engineering concurrently with development. Another method is buying a pilot production as the final development step. The data used in the pilot run would have undergone the acid test—use in production. The general problem is one that is familiar to both industry and Government—whether to award first production to the developer or to obtain competition.

Logistics Data to Designers. From the standpoint of logistics, we also need to provide these designers (of new equipment) with data on parts, components and equipment which have already been subject to engineering scrutiny and proven in use. Congress has expressed concern for the effectiveness of this communication. As a key to this effort the DOD has a program with the cooperation of both industry and military for an "Engineering Data Retrieval System" (EDRS). No doubt many of you have already heard of this test, which is scheduled for completion this summer.

Standardization. Data management and standardization are intertwined and therefore are inseparable. Briefly, standardization is one kind of data management. It serves and supports research and development and logistics, acting in the capacity of a broker of engineering information. A new DOD directive on Standardization Policy has just been published by the Secretary of Defense. Under the new directive, the Standardization Program emphasizes the life cycle of an item. Research and engineering are deeply committed in what was formerly a logistics program. Intra-service and intra-system standardization is advocated in lieu of across-the-board standardization.

Mr. John M. Malloy

Excerpt from address by Mr. John M. Malloy, Deputy Assistant Secretary of Defense (Procurement), before the DOD/NSIA Technical Information Symposium for Management, Los Angeles, Calif.

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. . . I wish to dwell briefly on the relationship or interface of rights in data in the data acquisition process and to some extent in the management process.

First, what rights are we talking about? We are talking about the rights of the Government to use the data it acquires. Such rights, as you know, fall into two categories. One is called UNLIMITED and the other, appropriately enough, LIMITED. When we speak of unlimited rights we mean the right to use, duplicate or disclose data in any manner or for any purpose whatsoever. On the other hand, limited rights means that the Government may not disclose the data, or use it for procurement or manufacturing purposes without the permission of the owner. There are two exceptions to this limitation on the use of data by the Government; namely, it can be used for emergency repair work and it can be released to foreign governments if the national interests of the United States so require. In these situations the use limitations just mentioned are applicable to the data transferred. In other words, the data in possession of the new recipient is limited and cannot be further disclosed.

The Government has extensive needs for many kinds of technical data. Its needs may well exceed those of private commercial customers. For defense purposes, millions of separate equipment and supply items must be acquired, operated and maintained. Data resulting from research and development contracts must be obtained, organized and disseminated to many different users. Finally, the Government must make technical data widely available in the form of contract specifications in order to obtain competition among its suppliers, and thus further economy in Government procurement.

Commercial organizations have a valid economic interest in data they have developed at their own expense for competitive purposes. Such data, particularly technical data, which discloses details of design or manufacture, is often closely held because its disclosure to competitors could jeopardize the competitive advantage it was developed to provide. Public disclosure of such technical data can cause serious economic hardship to the originating company.

It is apparent that there is no necessary correlation between the Government's needs for technical data and its contractors' economic interests therein. The Government must not be barred from bargaining and contracting to obtain such technical data as it needs, even though that data may normally not be disclosed in commercial practice. At the same time, acquiring, maintaining, storing, retrieving and distributing technical data in the vast quantities generated by modern technology is costly and burdensome for the Government. For this reason alone it would be necessary to control closely the extent and nature of data procurement. Such control is also necessary to insure Government respect for its contractors' economic interests in technical data relating to their privately developed items. Such respect is an important factor in fostering successful contractual relationships, in encouraging a ready flow of data essential to Government needs, and in providing incentive to develop, at private expense, items of military usefulness.

The New Policy.

Given this situation, it is obvious to all of you that some rational policy must exist for determining the rights to use data obtained from contractors. Any rights in data policy must be fair and equitable in all respects and be understood and accepted, both in Government and in industry. The policy must serve the interests of both parties. In addition—and this is most important—it must be workable and administrable in a consistent, repeatable way by those on the firing line in industry and in Government.

I think it is worth noting that the efforts to resolve this problem have experienced their 10th birthday. The first DOD data clause as such appeared in the 1955 edition of the Armed Service Procurement Regulation (ASPR). The first comprehensive statement of data policy was published in ASPR in April 1957 and subsequently revised in October 1958. Our current data policy was promulgated in Defense Procurement Circular #6 on May 14, 1964, for use on an optional basis. This policy has now been published in the ASPR and was effective for mandatory use in all procurements which call for data on and after April 1, 1965.

I consider that an outstanding contribution to a rational resolution of the rights problem is embodied in the concept that he who has paid the product development cost has the dominant interest in the rights in the technical data pertaining to that product. I am sure you will agree with me that this is easy to understand and that it is fair and equitable. Simply stated, if the Government pays for the development work, it is entitled to unlimited rights in that which is paid for. On the other hand, if the product is developed at private expense then the Government—with certain exceptions, such as "form, fit and function" data—must be satisfied with limited rights if it orders technical data pertaining to such privately developed products unless, of course, it negotiates for and pays for the data separately. This result is fair if it is understood and accepted by the Government.

Another significant policy advance, in my opinion, is the deferred ordering concept which, while establishing the rights in data at the time of contracting, permits the selection and ordering of data at a later time when specific needs can be intelligently ascertained. Thus, this concept is directly keyed to our policy of acquiring only what we really need. . . .

The new policy also provides new and better protection for subcontractors—a very troublesome area in the past. This is so because a standard contract clause is prescribed for flow down through the subcontract chain. In addition, subcontractors may submit data subject to limited rights directly to the Government instead of to higher tier contractors. Now I don't pretend that all of the subcontractor data problems have been solved. Much depends on the proper administration by both prime contractors and subcontractors.

Another new feature makes provision for an advance determination of rights in data ordered under the contract. The purpose is to avoid problems which might ensue at the time the data is actually delivered. These determinations of data rights are final and binding on both parties. It is not necessary for all data elements to be predetermined. However, it should be possible to identify the data rights for the specific data determined and ordered at the time of contracting. The remaining data rights can be determined at a later date when the exact nature and origin of the data is known. Of course, it will be possible, often, to identify the distribution of rights to all the data to be ordered.

Current Status.

. . . First of all, it should be stated that we are all just bsginning to get some practical, day to day, nose to nose, experience with the new data policy. However, I believe that never have the prospects been so good for resolution of the problem of rights in data. I know that the attitude of the Military Departments to the new regulation is good. They have confidence in its workability and I am much encouraged because I find substantially the same attitude on the part of industry. These statements may strike you as being overly optimistic, or as suggesting that we consider ourselves free of operating problems in the data area. What I am saying is that the environment is favorable to resolution of operating difficulties if and when they occur—and we expect to run into some difficulties.

Some elements of DOD initially expressed concern that competitive reprocurement opportunities would be degraded because of the contractor's ability to properly restrict more data than under our prior policy. Whether these are justified fears is an open question at the present time. But the DOD did not adopt this policy blindly in a vacuum. We are prepared to accept a lessening of competitive opportunities if that is, in fact, a result of the proper application of the regulation in the data acquisition process. This is consistent with the notion of contractually offering protection as to certain data pertaining to end items, components and processes developed at private expense provided the data does not fall within the stated exceptions such as the so-called form, fit and function data.

Further, except as to procurements under the formally advertised procedure, there now exists a new negotiation process. The actual data order is now a subject for negotiation and this I regard as an important consideration. Since you will know precisely, or should know the rights which will attach to the data which you agree to deliver, it then follows that if the data is being obtained for use in competitive reprocurment, and as such must be obtained with unlimited rights, a definite relationship between the rights—in this case, unlimited rights—and the quality of the data procured is struck. If the data sought, such as detailed design specifications and drawings, is properly protectible by the contractor, then the Government may accept data of lesser quality (such as form, fit and function) for competitive reprocurement instead of the detailed design engineering drawings which may be more desirable.

Operating experience under the policy has demonstrated that the number of line items of data initially listed on DD Form 1423 as being required by the Government has been materially reduced as part of the negotiation process. Thus we may properly conclude that the give-and-take of the negotiating process, as applied to the data order and influenced by the rights to be acquired, will work and operate to the benefit of both parties in establishing the data order. We are optimistic that the negotiation results will enable each party to satisfy its basic requirements. I recognize, however, that the negotiation of the appropriate data order is a different concept than that which prevailed under the old ASPR and, as such, we may be on the high end of the learning curve.

You and I know that proper understanding of policy will not just happen. It is a matter of indoctrination, training and experience. Just as we in the DOD feel this necessity, so must industry. It is, therefore, appropriate to advert to the importance of the attitude of management which, in the final analysis, has ultimate responsibility for the policy of your company under this regulation. I urge you to stress to your people that this policy has the ingredients of success if it is skillfully applied. I can assure you that this attitude exists in Government and has filtered to the operating people. This is not to say that mistakes will not occur, both by industry and Government personnel, but these cases, we think, will be confined to a minimum and the policy will function effectively in substantially all procurements.

I understand that some people in industry are apprehensive that the procedure in the new policy for predetermination of rights in data will be used by the Government to gain unlimited rights in data where, in fact, the policy calls for limited rights. Obviously this is not intended and, if it is found to occur, corrective steps will be taken. This provision is designed for administrative convenience to resolve questions on specific data rights in advance, wherever practical, thereby benefiting both industry and the Government.

There is another provision that industry as a whole may not fully appreciate and that is the concept of deferred ordering and delivery of data. . . . This particular technique has a tremendous potential in reducing the flow of data to the Government to that which is needed, and no more. The deferred selection and ordering of data until such time as better visibility is attained and requirements are better defined, will insure that the data order will, in fact, be discrete, appropriate to the purpose and manageable. Yet despite these obvious advantages of deferred ordering, I know of cases where people in industry are concerned that the Government will have a blank check to order data. This completely misses the point. The deferred order is limited to data which is specifically or by category (such as maintenance data) identified in the contract. Obviously, in a situation where the contract does not call for data, the Government cannot at a later date request delivery of data, even though the contract may contain the data rights clause. In this situation, the deferred order clause is not appropriate.

Private Expense.

Another area that may require clarification centers around the question: "What is private expense?" "What is developed at private expense?" In its simplest form, "private expense" and "developed at private expense" refer to products, and the data pertaining thereto, which were developed by you with your own funds. If the Government has contracted for the development, it cannot be said to have been at private expense. But in such cases, it is a requirement of the regulation that the Government's sponsorship be specifically identified in the schedule as research and development work if the Government is to secure data with unlimited rights. Obviously, it should not be difficult for anyone to recognize the precise contractual situation. If the Government has not specified research and development work, even though such work is being performed, then it suffers the loss of its unlimited rights position, and it must accept the result.

Moreover, it is clear that we do not consider our contribution to your independent research and development program as a cloud on your right to claim such developments under the independent research and development program as being at private expense. As we have stated in Defense Procurement Circular #22, we consider the Government should acquire no greater rights than any other customer buying your products or services by virtue of paying our reasonable share of your cost of doing business, including costs incurred under independent research and development programs. It is equally obvious that profits generated through product sales or otherwise, or capital contributions allocated to design and development of new products, do not constitute a basis for asserting development at Government expense, no matter whether the profits or capital contributions result from Government or commercial business. In short, and to put it another way, development at Government expense means development under a contract which specified research and development work and which was funded by the Government in whole or in part.

Prime-Subcontract Relationship.

I should like to touch again on the prime-subcontractor relationship. There is clear agreement that our policy must be as fair to a subcontractor as it is to a prime. While we do not blindly assume that absolute fairness can be achieved through the force of a regulation and related contractual agreements, it can be aided, and we think we have done just that. For example, in the usual situation, a prime contractor cannot prescribe that all data will be furnished with unlimited rights on the premise of complying with our policy. Moreover, it is the subcontractor, rather than the prime, who makes the initial determination as to Government rights in data ordered by the prime from his subcontractor. The subcontractor does this in accordance with the terms of the basic data clause which must be flowed down to him with the data order. This clause does not by its terms convey any rights in the data to the prime; rights are vested solely in the Government. If data is properly subject to limited rights, the subcontractor, if he wishes to do so, can deliver the data directly to the Government, rather than through the contractual tiers. This is now a contractual right rather than subject to special arrangements as in the past. Industry representatives who normally find themselves in the role of subcontractors have strongly and favorably indorsed this change.

Protection of Data Subject to Limited Rights.

It is, of course, basic to this new data rights policy that the Government can and will protect limited rights data (which may include so-called proprietary data) from disclosures to others except for specified purposes. Obviously, there is a certain element of risk involved in any disclosure of data. However, I can say that the Government will not take its obligation in this regard lightly. Steps will be taken promptly to correct any abuses that may develop. Most of the people who have considered this aspect of the new policy, both in Government and industry, consider that no insurmountable problems will develop in this regard.

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Nuclear Weapons Effects Testing and Research Program Information Available

Government agencies and contractors interested in the nuclear weapons effects testing and research program now can benefit from the expanded facilities of the Defense Atomic Support Agency (DASA) Data Center, Santa Barbara, Calif. The center, operated for DASA by General Electric-TEMPO, has consolidated the center's data collection activity and computer program library at a new location in downtown Santa Barbara.

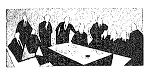
The Data Center was established in 1961 by DASA to analyze and disseminate scientific and technical information on selected nuclear weapons effects phenomenology. The center's facilities are available to authorized, cleared DOD agencies and their contractors. It serves scientific groups studying the basic phenomenology of nuclear detonations, as well as systems oriented researchers concerned with aerospace systems, satellite telemetry, military communications, radar detection systems, penetration aids, missile and anti-missile weapon systems.

The computer program library collection may be released to authorized users upon request. Program areas include EM blackout, geomagnetics, fluid dynamics, blast wave propagation and ionization. Information on new computer programs and advanced computer program work is regularly announced in Data Center publications.

Visitors to the center are provided study areas and facilities for the examination of virtually all basic forms of data. Facilities and equipment are available for visual examination or scaling of photographic records and measurements of densities, inspection of original data records on magnetic tapes and examination of paper records. Where required, arrangements can be made for reproduction of selected data.

Visit clearance requests (category 4/DOD Industrial Security Manual) should be submitted to the DASA Data Center through the visitor's cognizant military contracting office for endorsement of need. Visit requests from DASA contractors may be sent directly to the Data Center. All inquiries and visit requests should be submitted as early as possible in advance of the anticipated visit and should be addressed to: DASA Data Center, General Electric Company-TEMPO, 816 State Street, Santa Barbara, Calif. 93102, Telephone: (Area Code 805) 965-0551.

The Center constantly seeks information, especially nuclear related material, which has been or is being gathered by DOD agencies not directly associated with DASA funded research programs.



MEETINGS AND SYMPOSIA

SEPTEMBER 1965

1965 Semi-Annual Conference of the American Society of Photogrammetry, Sept. 22–23, at Wright-Patterson AFB, Ohio. Cosponsors: American Society of Photogrammetry and the Research and Technology Div. (AFSC). Contact: A. J. Cannon (SEG), Research and Technology Div. (AFSC). Wright-Patterson AFB, Ohio 45433, telephone (Area Code 513) 253-7111, ext. 35214.

American Society of Photogrammetry Conference, Sept. 22–24, at the Sheraton-Dayton Hotel, Dayton, Ohio. Sponsors: Aeronautics Systems Div., Research and Technology Div. (AFSC), and the American Society of Photogrammetry. Contact: J. R. Quick (MCLAEB), Wright-Patterson AFB, Ohio 45433, telephone (Area Code 513) 253-7111, ext. 35167.

AF Industry Data Management Symposium, Sept. 28–30, at Beverly-Hilton Hotel, Los Angeles, Calif. Sponsors: Ballistic System Div. (SBAMA), DOD and Industry. Contact: Lt. Col. D. A. Cook (BSOM), Norton AFB, Calif., telephone (Area Code 714) 889-4411, ext. 6451.

Sixth Symposium on Non-Destructive Testing, Sept. 28–30, at Sheraton-Dayton Hotel, Dayton, Ohio. Sponsor: Air Force Materials Laboratory (AFSC). Contact: Mr. Rowand (MAG), Air Force Materials Laboratory, Wright-Patterson AFB, Ohio 45433, telephone (Area Code 513) 253–7111, ext. 40209.

OCTOBER 1965

Ninth Annual Organic Chemistry Conference, Oct. 5–6, at Natick, Mass. Sponsor: U.S. Army Natick Laboratories. Contact: Dr. Louis Long, Jr., Asst. Head, Organic Chemistry Laboratory (PRD), U.S. Army Natick Laboratories, Kansas St., Natick, Mass.

J. M. Burgers' 70th Anniversary Symposium on the Dynamics of Fluids and Plasmas, Oct. 6–8, at the University of Maryland, College Park, Md. Sponsor: Air Force Office of Scientific Research. Contact: P. A. Thurston (SREM), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C. 20333, telephone (Area Code 202) OXford 6–3442.

1965 Congress of the International Federation for Documentation (FID), Oct. 7–16, at Washington, D.C. Sponsors: Air Force Office of Scientific Research, Office of Naval Research, Army Research Office, National Science Foundation and Council on Library Resources. Contact: Rowena Swanson (SRIR), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C. 20333, telephone (Area Code 202) OXford 6–5374.

NOVEMBER 1965

V/STOL Symposium, Nov. 3–4, at Wright-Patterson AFB, Ohio. Sponsor: American Helicopter Society. Hosts: Aeronautics System Div., Research and Technology Div. and Systems Engineering Group. Contact: George Dausman, Wright-Patterson AFB, Ohio, telephone (Area Code 513) 253–7111, ext. 25104 or 23164.

Fourth Hypervelocity Techniques Symposium, Nov. 15–16, at Arnold Air Force Station, Tenn. Sponsors: Arnold Engineering Development Center, ARO, Inc., and Denver Research Institute. Contact: J. Lukasiewicz, Arnold Air Force Station, Tenn., telephone (Area Code 615) 455–2611, ext. 7204 or 7205.

Fourth Annual Symposium on Physics of Failure in Electronics, Nov. 16–18, at the Illinois Institute of Technology Research Institute. Cosponsors: Rome Air Development Center and the Illinois Institute of Technology Research Institute. Contact: Joseph Schramp (EMERP), Rome Air Development Center, Griffiss AFB, N.Y., telephone (Area Code 315) FF6–3200, Ext. 2813.

DECEMBER 1965

Fourteenth Annual Wire and Cable Symposium, Dec. 1–3, at the Shelburne Hotel, Atlantic City, N.J. Sponsor: Army Electronics Command. Contact: Milton Tenzer, Symposium Chairman, Electronic Parts and Materials Div., Army Electronics Laboratory, Fort Monmouth, N.J. 07703, telephone 535–1834.

International Symposium on Differential Equations and Theory of Systems, Dec. 27–30, at the University of Puerto Rico. Sponsors: Air Force Office of Scientific Research, Brown University and the University of Puerto Rico. Contact: Maj. B. R. Agins (SRMA), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave. S.W., Washington, DC. 20333, telephone (Area Code 202) OXford 6–1302.

JANUARY 1966

Research Effectiveness as Related to Vehicles, Jan. 28–29, at Detroit, Mich. Sponsor: Department of the Army. Contact: Paul D. Denn, Chief, Research Div., U.S Army Mobility Command, Warren, Mich, telephone 756–1000.

ALL MEETINGS LISTED ARE UNCLASSIFIED.

Air Force Assn. Plans Fall Meeting

More than 3,000 aerospace industry leaders, military personnel, Government executives and educators are expected to attend the Air Force Association's (AFA) fall meeting to be held at the Sheraton-Park Hotel in Washington, D. C., Sept. 15–17.

The broad theme of the meeting is aerospace education with a seminar on "Scientific Literacy" scheduled for Wednesday afternoon, Sept. 15. Dr. Edward Teller, the distinguished nuclear physicist, will moderate the seminar, emphasizing the need in a democratic society to educate the public to the opportunities and dangers inherent in our advancing technology.

In a series of aerospace development briefings—a concept pioneered by AFA last September—top industry scientists and engineers will demonstrate equipment and techniques being developed for aircraft and spacecraft of tomorrow. These briefings will be presented in organized tours, from 9:30 a.m. to noon on each of the three days, for educators, members and staffs of Congressional committees, military and civilian members of Government agencies concerned with aviation and space programs and foreign military attaches on Washington embassy staffs.

In past years, AFA has scheduled the education seminar and industry presentations as part of its national convention. Because both these events and the convention have grown in scope and attendance, AFA's Board of Directors voted last year to separate the two, with a fall meeting to be held annually in Washington, D. C., and the convention in the spring at various cities throughout the nation.

AFA's 20th national convention will be held in Dallas, Tex., March 22–25, 1966. San Francisco, Calif., has been selected as the site of the 1967 convention scheduled for March 15–18, 1967.

CALENDAR OF EVENTS

Sept. 8–9: National Security Industrial Assn. Anti-Submarine Warfare Ship Subcommittee meeting, Newport, R. I.
Sept. 28–30: Air Force-Industry Data Management Conference, Beverly Hilton Hotel, Los Angeles, Calif.
Oct. 3–6: Society of Petroleum Engineers Convention, Denver, Colo.
Oct. 4–7: National Symposium on Space Electronics, Miami Beach, Fla.
Oct. 10–14: Electrochemical Society meeting, Buffalo, N. Y.
Oct. 11–13: American Oil Chemists Society meeting, Cincinnati, Ohio.
Oct. 12: American Ordnance Assn. meeting, Chicago, Ill.
Oct. 13–15: Propeller Club of the U. S. meeting, Galveston, Tex.
Oct. 18–20: Defense Supply Assn. convention, Statler Hilton Hotel, Washington, D. C.
Oct. 18–22: American Society of Civil Engineers meeting, Kansas City, Mo.
Oct. 19–21: American Society of Mechanical Engineers meeting, San Francisco, Calif.
Oct. 25–27: Assn. of the U. S. Army annual meeting, Washington, D. C.
Oct. 26: American Society of Safety Engineers meeting, Chicago, Ill.
Nov. 3–4: National Security Industrial Assn. research & development symposium, Washington, D. C.
Nov. 30–Dec. 2: American Ordnance Assn. equipment manual symposium, Statler Hilton Hotel, Washington, D. C.

Kentucky Industry Procurement Conference Set

The Department of Defense will participate in a two-day federal and state science and industry procurement conference in Louisville, Ky., Sept. 15 and 16 at the invitation of Kentucky Governor Edward T. Breathitt.

The conference is being sponsored by the Kentucky State Department of Commerce, the Kentucky Chamber of Commerce, and the Associated Industries of Kentucky.

Procurement specialists from the Military Services will be joined by representatives of the National Aeronautics and Space Administration, Atomic Energy Commission, Veterans Administration, the Department of Commerce and the Small Business Administration, as well as by state agencies and defense major prime contractors, to conduct a counselling and assistance program for those interested in defense and other U.S. Government agency business opportunities.

Commissioner Katherine Peden of the Kentucky State Department of Commerce, who initiated the procurement conference, has designated Mr. James Beasley, Director of the Division of Continuing Industries, to act as coordinator for this second annual procurement conference.

Know Your Small Business Specialist

Small business or labor surplus firms interested in competing for Defense procurements do not have to go to Washington to find out how to do business with the DOD.

The Small Business/Labor Surplus Specialist at the nearest military procurement office is equipped to provide counseling and assistance to the prospective bidder.

In most cases the best method of obtaining defense contracts is to maintain contact with the purchasing offices that buy the particular product or service concerned, make the firm's capabilities known, and keep abreast of purchasing being done at those offices.

A valuable aid to prospective bidders is a booklet called "Selling to the Military." The book contains general information on items purchased and the location of principal military purchasing offices. It can be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, for 35 cents.

DOD Assumes Responsibility For Small Business Set-Asides

The Department of Defense has agreed to assume full responsibility for the review of planned procurements and the initiation of small business set-asides as a result of a recommendation from the Bureau of the Budget.

Effective July 1, 1965, the Small Business Administration (SBA) ceased to assign representatives to military procurement offices. Future procurement reviews and set-aside determinations will be entirely handled by the DOD Small Business Specialists and the Contracting Officer at the procuring activity.

New procedures are being formulated by the Office of the Secretary of Defense and the Small Business Administration to establish an SBA surveillance program for the review of the set-aside program and its administration.

A change in small business set-asides for military construction also became effective July 1. Proposed military construction procurements of $500,000 or more will no longer be set aside for exclusive small business participation.

With the implementation of these changes, DOD is taking positive action to insure that small business firms continue to receive maximum consideration in defense procurements. Appropriate revisions to the Armed Services Procurement Regulation reflecting these changes are contained in Defense Procurement Circular No. 31.

Seminars Scheduled on National Security

Regular and reserve military officers, civilian Government Officials, industrial executives, and their wives are invited to attend two special National Security Seminars scheduled from 8:30 a.m. to 3:50 p.m., Sept. 13–17 and again Sept. 20–24, at the Department of Interior Auditorium, Washington, D. C.

Each seminar consists of 33 factual, illustrated presentations covering the various factors affecting our national security in the context of world affairs. These seminars are in preparation for the 14 regularly scheduled seminars conducted by the Industrial College of the Armed Forces each year in selected cities throughout the nation. For information concerning registration, contact Captain C. F. Pfeifer, USN, Industrial College of the Armed Forces, Washington, D. C. 20315, telephone (Area Code 202) OXford 5-8205.

BIBLIOGRAPHY

DOD Directive 5105.36, "Defense Contract Audit Agency," June 9, 1965. Establishes mission and functions of the Defense Contract Audit Agency.

DOD Directive 3200.9, "Initiation of Engineering and Operational Systems Development," July 1, 1965. Establishes DOD policies governing Concept Formulation and Contract Definition in the initiation of Engineering Development and Operational Systems Development of major projects. (Cancels DOD Directive 3200.9, "Project Definition Phase," Feb. 26, 1964.)

DOD directives and instructions may be obtained from:
Publications Distribution Branch
Office of the Secretary of Defense
Room 3B 200, The Pentagon
Washington, D. C. 20301

Defense Procurement Circular No. 29, June 4, 1965. New Section VI—Balance of Payments and Offshore Procurement Material.

Defense Procurement Circular No. 30, June 25, 1965. Requests for Wage Determinations; Standard Form 33, Correction of First Printing of Dec. 1964 Edition; DD Form 350, Modification of Due Date and Distribution.

Defense Procurement Circular No. 31, July 1, 1965. Small Business Set-Aside Program; Labor Standards Provisions (Standard Form 19-A).

Defense Procurement Circular No. 32, July 6, 1965. Contract Auditor Processing of Cost-Reimbursement Vouchers; ASPR Section XV, Part 3—Cost Principles.

Each Defense Procurement Circular (DPC) is designed to place new or changed policies or procedures in effect prior to publication of an Armed Services Procurement Regulation (ASPR) revision. The items in each circular are cancelled after six months, unless specifically eliminated earlier by a new DPC or by publications in the ASPR. ASPR subscribers will receive DPC's and ASPR revisions through the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

Systems Management, Configuration Management during Definition and Acquisition Phases. This Air Force System Command manual establishes policy, provides guidance and assigns responsibilities for configuration management of system/equipment programs. Issued in loose-leaf form 356 p. il. Catalog No. D301.-45/14:375-1 $3.50

Apollo Program, Apollo Configuration Management Manual. Establishes uniform configuration management methods and procedures which will accurately define all Apollo Program equipment at any point in time. 353 p. il. Catalog No. NAS1.18:Ap7 $2.00

Design Criteria and Construction Standards. This NASA manual provides design criteria and construction standards for use in planning, programming, designing and constructing new NASA facilities and altering existing facilities. 237 p. il. Catalog No. NAS1.18:D46 $2.00

The Balance of Payments Statistics of the United States, A Review and Appraisal. Contains the report of the Review Committee for Balance of Payments Statistics to the Bureau of the Budget, on the adequacy of U. S. balance of payments statistics and recommendations for their improvement. 194 p. il. Catalog No. PrEx 2.2:B18 $1.50

Hearings on Military Posture and H. R. 4016. Presents the hearings on Military Posture and H. R. 4016 to authorize appropriations during FY 66 for procurement of aircraft, missiles, and naval vessels, and research, development, test, and evaluation, for the Armed Forces and for other purposes. These hearings were held before the House Committee on Armed Services, 89th Cong., 1st sess., during February and March 1965. 1428 p. il. Catalog No. Y4.Ar5/2a:965-66/7 $3.75

Publications that require remittance are available for purchase at U. S. Government Printing Office, Washington, D. C. 20402.

Two Color Drawings to be Used by Army Engineers in Bid Proposals

Contractors who bid on future U.S. Army Corps of Engineers projects can expect to find, for the first time, two-color project drawings on "half-size" sheets in addition to the specifications and other items which make up the package of bid documents.

Under this new system, being incorporated into the Corps' cost reduction program, standard 28x40-inch drawings are to be prepared as usual and then reduced to 12x20 size. The various colors will be used to show new work in relation to existing construction or to distinguish between highly complex mechanical and electrical systems in new projects.

The Office of the Chief of Engineers has announced that the Corps' District Engineer and other field offices are being urged to consider these changes in the invitation-to-bid package for the sake of greater efficiency and to give prospective bidders and the contracting officers higher quality plans from which to make their estimates.

This is not a Corps-wide requirement, the Office of the Chief of Engineers points out, since each field agency will be free to use the proposed system on a selective basis wherever it will reduce costs or otherwise benefit the Government.

In the past, two-color drawings have been considered too expensive for use in the construction industry. But today, low-cost platemaking and offset printing techniques have made it possible to reproduce multi-color drawings cheaper than single-color printing in the past. While these multi-color plans are slightly more expensive than single-color drawings, overall savings should result by virtue of the time expected to be saved by contractor and Government personnel who will be working with plans which are clearer and easier to read.

The additional colors, usually blue or red, will provide prospective bidders with high quality drawings which are easier to understand and more efficient to work with. This should result in more realistic estimates and possibly lower prices by contractors bidding on the job, despite the slight additional cost of printing the drawings in two or more colors.

The new system should also bring similar savings to the Government because less time will be involved in preparing the Government's cost estimates. It is estimated that, when fully implemented, the system will save the Government at least $500,000 annually.

Small Business & Labor Surplus Program

(*Continued From Page 9*)

Illustrative of this process is a recent Navy multi-year procurement of bomb fins for the Mark–14, which was declared a labor surplus area set-aside. The procurement was divided into two segments of 133,150 units each with 24 firms bidding on the non-set-aside portion which was awarded to Columbus Milpar, Columbus, Ohio, as low bidder. Columbus Milpar indicated an intention to perform the contract in the labor surplus area of New Lexington, Ohio, and was, therefore, also eligible for the set-aside portion. The contracting officer determined, however, that the firm did not have the capacity to perform both portions of the contract and negotiations were conducted with and an award made to the next eligible labor surplus area concern, Lasko Metal Products, Westchester, Pa. Lasko agreed to perform the set-aside portion of the contract in the labor surplus area of Philadelphia and Cressona, Pa., and Messena, N.Y. Each award was valued at approximately $7 million.

Subcontracting Procedures and Practices.

In contracts up to $500,000 the contractor assumes the obligation to subcontract the maximum amount to small business or labor surplus area concerns consistent with the efficient performance of the contract. In contracts over $500,000, the contractor is required to take a number of specific actions designed to insure that these firms are considered fairly in the subcontracting role.

Supplementary to these requirements, there is a joint DOD-Aerospace Industries Association program for labor surplus area referrals to meet 18 categories of needed sources. Some 356 firms have been referred by the Army, Navy, Air Force and DSA to participating prime contractors for subcontracting consideration under this program.

DEFENSE PRIME CONTRACT AWARDS TO SMALL BUSINESS

(Amounts in Thousands)

	FY 1965 July-May	*FY 1964 July-May*
Procurement from All Firms	$21,879	$23,580
Procurement from Small Business Firms	4,467	4,132
% Small Business	20.4	17.5

Procurement Clinic

DOD representatives participate extensively in local, state or regional clinics to acquaint small business and labor surplus area concerns with the Federal contract process through a combination of presentations, discussions, films, exhibits and pass-out materials.

DOD counselors are on hand with current IFB's and RFP's to provide interested firms with tangible examples of prime and subcontract business for their consideration. Representatives of the major prime contractors located in the area also participate along with other major Government procuring agencies, including the National Aeronautics and Space Agency, General Service Administration, Atomic Energy Commission and the Veterans Administration. Service agencies such as the Department of Commerce, the Small Business Administration and the Department of Labor are on hand to explain the programs of their agencies designed to assist small business and labor surplus area firms.

Counseling and Assistance.

The DOD Directorate maintains a Central Military Procurement Information Office to act as a guide service for businessmen in their dealings with the military establishment.

Specific information dealing with particular procurements or one of the military services is available at the local field installations from the Small Business and Labor Surplus Specialist assigned to the procuring activity. These specialists can provide assistance in being placed on bidders' lists, provide leads for subcontract opportunities and arrange referral to other procuring activities.

Special Projects

As the largest purchaser of goods and services in the nation, the procurement policies of the DOD have a decided effect on the economic conditions in regions, states and local communities. From time to time, the Directorate for Small Business and Economic Utilization Policy is asked to participate in a variety of actions concerned with the socio-economic implications of defense procurements. In the past, these have included working with Congressional Committees on special studies; the President's South Bend Committee, the President's Committee on the Handicapped, the Alaska Disaster Program and the Appalachia Program. Liaison is also maintained with the Office of Emergency Planning, Small Business Administration, Department of Commerce and the Department of Labor on related activities.

Greater Washington Council for Small Business/Labor Surplus Area Formed

Sixty-three DOD specialists met at Cameron Station, Alexandria, Va., May 13, to inaugurate a Greater Washington Small Business/Labor Surplus Area Council designed to serve as a model for similar groups throughout the country.

Establishment of such councils was recommended in the 14th Annual Report of the Senate Small Business Committee and will eventually be broadened to include other Government agencies.

The purpose of the councils is to improve communication through an interchange of ideas and problem areas, and to provide a forum for guest speakers and panel discussion on matters of mutual interest regarding DOD policies and programs for small business and labor surplus areas.

The program for the May 13 quarterly meeting covered the Certificate of Competency Referral Program. Panelists included Colonel C. O. Duty, Office of Assistant Secretary of the Army (Installations and Logistics); Mr. T. G. Waale, Small Business Administration Liaison Officer; Mr. Robert Owens, Deputy Director, Small Business/Economic Utilization Policy; and Mr. Morris Questal, Office of Assistant Secretary of the Navy (Installations and Logistics).

Members of the first year's Executive Committee of the Work Council are Anthony J. Caiozzo, Army Materiel Command, Chairman; Herman G. Fowler, Bureau of Supplies and Accounts, Vice Chairman and Navy representative; and department representatives Jean P. Jaquette, Sr., Army Supply and Maintenance Command; and I. E. Peterson, DSA Headquarters. The chairmanship will rotate annually.

McDonnell Small Business Newsletter Lauded by Lazure

The Small Business and Labor Surplus Area Program conducted by McDonnell Aircraft Corporation is described by Albert C. Lazure, DOD Director for Small Business and Economic Utilization Policy, as "an excellent example of what our subcontracting program hopes to achieve."

K. S. Vandergrift, McDonnell's Corporate Small Business Administrator, publishes what Lazure considers to be one of the most comprehensive and informative Small Business Newsletters issued by major defense prime contractors.

A typical McDonnel newsletter carries current subcontracting figures, a listing of new small business sources, upcoming events of interest to small business, DOD-Aerospace Industries Association referrals, Small Business Administration notes, labor surplus area firms and changes in area classifications, new publications and changes in key personnel.

The Systems Effectiveness Concept
An R&D Appraisal Process

by

Cdr. Keith N. Sargent, USN
Head, Systems Effectiveness Branch
Office of Chief of Naval Material

Within the broad spectrum of concerns in the Navy Research & Development (R&D) Program there is one effort area which is singularly far-reaching. It is one which will be of increasing import to all segments of industry involved in Navy R&D work. This is identified as Systems Effectiveness.

To understand Systems Effectiveness, it is well to consider briefly some of the problem areas which led to the evolution of the concept. The fundamental problem is the spiraling complexity of modern warfare systems. While complexities can be reduced to some extent by avoidance of what Dr. Fubini, former Assistant Secretary of Defense (Deputy Director of Defense Research & Engineering), so aptly termed the American Syndrome—gadgeteering, the reality of modern warfare is that complex threats inevitably lead to complex counters.

As systems become more complex the probabilities increase that some element of the system will be deficient or defective so that the effective operation of the system will be degraded. Realization of this has led to a concerted effort in reliability design and engineering. This effort in itself has added to complexity particularly where design redundancy was employed. Further, the impact of the so-called law of diminishing returns is keenly felt as higher orders of MTBF (Mean Time Between Failure) for components is attempted. Component costs become very burdensome if not intolerable.

When these costs become intolerable the problems can be met through maintenance and repair procedures, at least in manned systems. As a result another area of design and development, termed maintainability, has evolved. While this can bridge the gap between achieved reliability and reliability in an absolute sense, it is not without costs in dollars as well in additional problems being generated. The latter generally fall into two categories, logistics support and increased technical personnel requirements. These, in turn, lead to problems of man-machine relationships and operability as well as involving a much wider range of functions and activities than has been customarily regarded by the design and engineering notion of system in a hardware sense.

As a result it has become clear that the idea of what constitutes a warfare system had to be expanded and explicated. Further a concept was needed within which the foregoing factors could be related one to the other. This concept had to provide a disciplined structure with which to analyze the relative import of these factors as related to the system. This would provide a basis for trade-off decisions taking into account the additional considerations of costs and time.

The concept which has been evolved is premised on a fundamental reality. There can be but one philosophical end for any warfare system. That end is mission accomplishment. With this end in view, a definition of Systems Effectiveness has been postulated. This definition is that Systems Effectiveness is a measure of the extent to which a system can be expected to complete its assigned mission within an established time frame under stated environmental conditions. Implicit in this definition of a system as the total complex of men, materials and facilities required to accomplish a military mission.

Within the context of the foregoing definitions and raisons d'etre, just what is the Systems Effectiveness concept and how does the Navy and industry come to grips with it in the real world?

The gist of the concept is expressed in a series of three conceptual models which are related through a progression: The basic model is $E_s = PAU$
where E_s is the index of Systems Effectiveness
P is the index of Performance
A is the index of Availability
U is the index of Utilization

In deriving the indices for P, A and U, the assumption is made for each term that there is complete achievement of the other, i.e., the value of P is premised upon 100% availability and utilization. Further, the terms can be expressed in predicted values or achieved values depending upon the state of development.

Since $E_s = PAU$ is the basic model, each of the controlling indices should be defined a bit more explicitly.

P expresses the performance of the system to a base representing absolute mission achievement. This is in terms of pure operational characteristics, e.g., overpressure on target, troops landed, area neutralized, etc.

A expresses the period or fraction of time that the system is ready and capable of fully performing its mission. In view of the somewhat similar use of the term A by reliability engineers, it is important to understand that A in this expression goes beyond the reliability definition of $A = \frac{MTBF}{MTBF + MTRR}$. It is a continuous availability to completion of mission rather than the reliability expression which holds only to the point t (time) = 0.

U expresses the fraction of the performance capability actually utilized or capable of being utilized due to the specific, strategic or tactical application of the system and the total functional as well as physical environment anticipated to be encountered.

These indices are essentially dimensionless numerical expressions of judgment. They serve to offset the inability to measure many of the well recognized factors which determine whether or not a system is effective. This, however, is not to say that dimensioned quantification is not involved. In deriving each index a great deal of mathematics, both empirical and probabalistic, is involved. As the state of the art advances, more explicit quantification will be employed thereby reducing the degree to which resort must be made to quantizing. However, there appears little likelihood that quantizing can be eliminated in the foreseeable future. It must then be recognized that the indices have no empirical value in themselves and are meaningful only as related to their specific bases. Thus they are figures of merit which have utility in comparative evaluations but must never be used out of the context of their bases.

The second of the series of expressions: $E_c = \frac{(PAU\quad)}{W\ (C_a + C_u)}$ where W is the index of military worth of the mission of the system. C_a is the dollar costs of acquisition of the system including its pro rata share of research and development costs.

C_u is the dollar costs of utilization or ownership including its share of support facilities, manpower, training, etc.

PAU—as previously indicated

Essentially this expression is the ratio of the effectiveness of the system to its total costs. The term W is introduced to provide a means for comparative evaluation of multi-missioned systems which are not identically missioned albeit one or more mission capabilities are common to the systems being compared. It is a numerical value used to express an intuitive value judgment. As such it must be expressed to a base number. Its principal utility lies in greater precision of judgment than is usually found in narrative expressions and in the visibility that it gives to the value judgment. This term could be extremely troublesome if there were great disparity between the missions of systems to be compared. This is not likely. Indeed the use of the Cost Effectiveness expression is primarily in connection with similar or identically missioned systems or a single system at various points in time. In the latter two cases the term W cancels out. Further, the closer the systems are in mission assignment the less sensitive the expressions are to changes in W values.

To assist in the valuation of W in the multimissioned case a subordinate expression for W is given: $W = \frac{(F_1 w_1 + \ldots . F_n w_n)}{n}$ where F is the fraction of the system effort devoted to a given mission, w with the summation of $F_1 + \ldots . F_n$ being unity.

The third expression in the series is that for what has been termed Defense Effectiveness. $E_d = \frac{W}{E_t} \frac{(PAU \quad)}{(C_a + C_o)}$ where the term E_t, the index of the degradation of military worth as a function of time, is introduced into the Cost Effectiveness expression. Both of the terms, W and E_t, are indices which together form a coefficient with which to express the military judgment factor which Dr. Alain Enthoven, Deputy Assistant Secretary of Defense (Systems Analysis) has so clearly shown as being a vital part of Defense management.

Military judgment is an intuitive process which is quite subjective. However, this subjectivity is highly tempered by hard experience. While it is true that scientists and engineers alike prefer to avoid intuitive answers and thus dislike decisions premised on intuitive factors, both make such judgments constantly in the performance of their work. These judgments are acceptable to them because of their awareness of the experience underlying their own intuition. That is to say that the weighting factors of their judgments are visible to them.

The principal thrust of the System Effectiveness concept is to give visibility to military judgments through the assignment of quantitive values which can be examined as to their impact and correlated with the judgment values assigned by others. A corrolary to this is the knowledge of exactly where judgments are applied and the sharpening of these judgments through the requirement to express them as numerics. At the very least, the Systems Effectiveness concept provides for the recording of how decisions were developed.

In this regard, Systems Effectiveness is a discipline. It is a discipline which requires the project engineers and managers to essentially "put their money where their mouth is.)" It is a discipline which requires both the military and industry to explicitly state their judgment values for the edification of the other. It is a discipline within which all of the factors which contribute to the effectiveness of mission accomplishment can be related. Having thus related these factors, gaming techniques can be employed to determine the optimum combination of factors within achievable values of each factor.

There are two objectives guiding the use of the Systems Effectiveness concept. The first applies in both the near-term and long-range areas. This is the upgrading of the confidence factor in management decisions. The knowledge of the areas where intuitive judgments occur together with a value associated with each judgment is considered to be a major step forward in upgrading the confidence factor. Further, the necessity to assign a value which can be appraised by others tends to assure considered judgements rather than "shooting from the hip."

The second objective lies in the long-range area. It is to provide the relational framework for and stimulation of greater efforts to quantify the elements of Systems Effectiveness. This is deemed necessary to serve as an aid to exercising judgment rather than as a replacement for judgment.

To this point Systems Effectiveness has been discussed largely in terms of the military manager's employment of the concept and as expressed by the Navy's approach to the concept. Utilization is not limited to the military manager nor is the Navy approach the only approach. The Air Force has developed an approach through the Air Force Systems Command's (AFSC) Weapons Systems Effectiveness Industrial Advisory Committee (WSEIAC) which does not differ fundamentally from the Navy approach.

The conceptual models developed by AFSC and by the Navy do provide management tools for industry as well as the military. With these tools, industry can present their case for the system design which they espouse. Further top management in industry is in a better position to appraise their own firm's effort and, through common use of the tools, can understand better the military decision process. Debriefing after a source selection decision can be done in terms of an explicit set of decision points. While the Systems Effectiveness modeling structures do not eliminate disagreements as to the validity of individual value judgments, they do make the value judgments visible so that all parties may understand exactly wherein they disagree.

It should be understood by both the military and industry that the Systems Effectiveness concept imposes a hard discipline on both. Decisions will have to be faced squarely and be explicated. Planning and analysis in depth are mandatory for both. The pay-off, however, is high. Through this discipline military management can obtain not only better decisions but a higher confidence in these decisions. Industry management can obtain similar results within their own management structure and additionally have a visible basis for knowing just where they stand with regard to military management decisions.

Army Tests Cargo Transfer Platform

Adverse shore conditions likely to hinder normal ship-to-shore cargo operations may be a thing of the past if Army tests of an experimental cargo transfer platform, called the Mark IV Ship's Wing, prove successful.

Developed by the U.S. Army Aviation Material Laboratories at Fort Eustis, Va., and currently under study by the U.S. Army General Equipment Test Activity (GETA), Fort Lee, Va., the device is designed to facilitate delivery of cargoes to the beach from vessels at anchor offshore. It can also be used to land troops, transfer casualties and litter cases to hospital ships, for helicopter-messenger service and for other loading and evacuation activities.

By taking to the air, the Army's need for port or beach facilities in landing operations can be reduced. Operations can be continued despite unfavorable tide conditions, rough surf, fouled beaches, mined landing areas, or other obstacles. Use of the platform opens wide possibilities for a two-way route to the landing beach and to more distant inland points.

When the Ship's Wing is in operation, an 8x14-foot winch-operated cargo dolly is positioned on a cantilever girder or wing projecting sufficiently outboard of the ship's rigging and superstructure to permit helicopters to approach the pickup point. The aircraft pluck their individual lifts from the dolly using external sling loading techniques.

The platform can be installed aboard most cargo vessels in less than an hour using regular stevedore labor and the ship's boom. It is 65 feet long and consists of a 40-foot metal girder with a telescoping 25-foot extension. Maximum capacity is 14,000 pounds.

After completion of engineering tests by GETA off Fort Story, Va., the Mark IV Ship's Wing was installed aboard a cargo vessel bound for Korea to continue evaluation. Service tests will be conducted in the Far East by a three-man GETA test team to determine its utility and limitations in field use.

President Johnson Honors Cost Reduction Contributors

President Lyndon B. Johnson presented Certificates of Merit to 17 individuals who have contributed significantly to the Cost Reduction Program of the Department of Defense in a ceremony at the Pentagon July 28.

The awards ceremony was the highlight of Cost Reduction Week (July 26-30) which was observed throughout the Department of Defense in recognition of the efforts of thousands of civilian and military personnel who have contributed to the $4.6 billion in savings achieved in FY 1965 and to focus attention on the actions required to attain the Department goal of saving $6.1 billion annually by FY 1969 and each year there-after.

Attending the ceremony were Secretary of Defense Robert S. McNamara, Assistant Secretary of Defense (Installations and Logistics) Paul R. Ignatius, Secretaries of the Military Departments, members of the Joint Chiefs of Staff and other high ranking civilian and military officials of the Department of Defense.

Among those receiving certificates were a city attorney of Benicia, Calif., cited for his participation in transforming surplus military facilities into productive civilian uses, and a Navy civilian personnel officer, cited for instituting employee placement programs for personnel at installations scheduled for closing.

Those receiving citations were:

Brigadier General Joseph S. Bleymaier, Deputy Commander, Manned Systems, Space Systems Division, Los Angeles, Calif.

Mr. John A. Bohn, City Attorney, Benicia, Calif.

Mr. Robert F. Canny, Supply Commodity Management Officer, Ogden Air Materiel Area, Ogden, Utah.

Mr. Benedict J. Conte, Equipment Specialist, Ogden Air Material Area, Ogden, Utah.

Mr. Charles D. Edmunds, Jr., Quarterman Electronics Mechanic, Pearl Harbor Naval Shipyard, Hawaii.

Mr. Albert G. Gross, Industrial Relations Officer (Civilian Personnel), Naval Research Laboratory, Washington, D.C.

M/Sgt. Leroy Gudgel, Chief, Aircraft Equipment Section, Dover Air Force Base, Delaware.

Mrs. Hazel S. Hanback, Director, Publications Division, Bureau of Yards & Docks, Navy Department, Washington, D.C.

Mr. Harold E. Hoffman, Inventory Management Specialist, Ships Parts Control Center, Mechanicsburg, Pa.

Mr. John A. Bohn, City Attorney, Benicia, Calif., receives Certificate of Merit from President Lyndon B. Johnson as Secretary of Defense Robert S. McNamara and Chairman of the Joint Chief of Staff General Earle G. Wheeler look on. Mr. Bohn was cited for his contribution to the DOD Cost Reduction Program through his efforts enabling the City of Benicia to transform surplus military facilities of Benicia Arsenal to productive civilian uses.

SP-5 Bernd W. A. Kliem, Mechanical Engineering Assistant, Army Munitions Command, Picatinny Arsenal, N. J.

SFC John L. LaRue, Senior Instructor, USATC Armor, U.S. Training Center, Fort Knox, Ky.

Mr. Morton Memberg, Inventory Management Specialist, Defense Personnel Support Center, Philadelphia, Pa.

Mr. Eugene L. Simpson, General Supply Officer, Army Ammunition Procurement & Supply Agency, Joliet, Ill.

Mr. Gerald Smith, Standardization Specialist, Defense Personnel Support Center, Philadelphia, Pa.

Mr. Robert E. Turner, Equipment Specialist, Ogden Air Materiel Area, Ogden, Utah.

Mr. Adolph A. Wronka, Industrial Engineering Technician, Industrial Service, Department of the Army, Picatinny Arsenal, N. J.

Lt. Raymond W. Youmans, Contracting Officer, Purchasing Division, Naval Ordnance Plant, Louisville, Ky.

Universities to Receive Reactor Fuel Elements

The first transfer of reactor fuel elements to institutions of higher learning will be made by the Defense Department soon when 114 elements are turned over to three universities by the Armed Forces Radiobiology Research Institute (AFRRI), in Bethesda, Md. The transfer is being made under authorization of the U. S. Atomic Energy Commission.

The elements will be used by the schools to expand their radiation research programs, particularly in the area of graduate training in nuclear physics, nuclear engineering and related fields.

The 114 enriched uranium fuel elements have been used at the AFRRI for the past two years. Because of a recent upgrading of the Defense Atomic Support Agency TRIGA reactor (a change from aluminum to stainless steel clad fuel), the aluminum clad elements no longer meet the reactor's operating requirements.

In the past, the disposal procedure for such fuel has been reprocessing or burial along with other radioactive waste materials. However, through action initiated by the AFRRI, it was found that the usefulness of the fuel could be increased by transferring it to universities operating TRIGA-supported research facilities.

Six elements will serve as replacements and spares for steady state and pulse mode operations of the Cornell University TRIGA reactor.

The 52 elements transferred to the University of Illinois will be used in post-graduate studies of neutron pulse propogation through a subcritical multiplying medium. The pulse will be initiated by the Illinois TRIGA reactor and will impinge on the subcritical assembly which will be located in the bulk shielding tank adjoining the TRIGA. This will provide a method of determining reactivity and measuring neutron thermalization parameters. It will also provide information of interest for the theory of coupled reactor systems.

North Carolina State University will use 56 elements to assist in the conversion of its existing MTR-type 10 KW reactor to a TRIGA type reactor suitable for transient radiation studies, neutron activation analysis and radioisotope production. The University's system will then be capable of operating at 100 KW steady state and will enable the reactor to be pulsed from 10 watts to approximately one billion watts in .02 seconds of time.

AFFRI, a command of the Defense Atomic Support Agency, conducts research with the ultimate goal of better understanding the effects of ionizing radiation on biological systems. Its research efforts range from studies at the subcellular level to evaluations of behavior patterns.

DEFENSE PROCUREMENT

Contracts of $1,000,000 and over awarded during month of July 1965:

DEFENSE SUPPLY AGENCY

1—J. P. Stevens Co., New York, N. Y. $1,026,000. 450,000 yards of wool gabardine cloth. Rockingham, N. C. and Milledgeville, Ga. Defense Personnel Support Center, Philadelphia, Pa.

—Stewart Avionics, Inc., Brooklyn, N. Y. $1,037,732. 617 portable floodlight sets. Brooklyn. Defense General Supply Center, Richmond, Va.

—U. S. Rubber Co., Providence, R. I. $2,130,264. 2,648 collapsible fabric fuel tanks. Providence. Defense General Supply Center, Richmond, Va.

6—DeRossi & Sons Co., Vineland, N. J. $1,379,000. 100,000 tropical coats. Vineland. Defense Personnel Support Center, Philadelphia, Pa.

15—Pacific Mills, Halifax Va. $2,360,540. 1,037,600 yards of polyester fiber and wool cloth. Raeford, N. C., Halifax and Clarksville, Va. Defense Personnel Support Center, Philadelphia, Pa.

16—Texaco Inc., New York, N. Y. $1,241,352. 15,120,000 gal. Grade JP-4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

19—Hercules Powder Co., Wilmington, Del. $1,501,200. 270,000 gal. of chemicals. Jacksonville, Ark. Defense General Supply Center, Richmond, Va.

20—Burlington Mills, Inc., New York, N. Y. $2,276,423. 1,258,000 cotton sheets. Durham, N. C.; Post and Memphis, Tex. Defense Personnel Support Center, Philadelphia, Pa.

23—J. P. Stevens & Co., Inc., New York, N. Y. $1,206,840. 2,000,000 yards of cotton twill cloth. Piedmont and Clemson, S. C. Defense Personnel Center Philadelphia, Pa.

27—Bata Shoe Co., Belcamp, Md. $2,072,913. 225,072 pairs of combat boots. Belcamp. Defense Personnel Support Center, Philadelphia, Pa.

—Safety First Shoe Co., Inc., Nashville, Tenn. $1,000,185. 174,936 pairs of combat boots, Huntsville, Ala. Defense Personnel Support Center Philadelphia, Pa.

28—J. P. Stevens & Co., Inc., New York, N. Y. $1,440,678. 1,826,668 yards of wind-resistant cotton poplin cloth. Great Falls and Clemson, S. C.; Griffin, Ga.; and Marion, N. C. Defense Personnel Support Center, Philadelphia, Pa.

—B. G. Colton, Raylong Fabrics, Inc., New York, N. Y. $1,353,919. 1,578,332 yards of wind-resistant cotton poplin cloth. Columbus, Ga. and Rutherfordton and Lexington, N. C. Defense Personnel Support Center, Philadelphia, Pa.

29—Stauffer Chemical Co., New York, N. Y. $2,606,774. 2,224,104 one-quart cans and 83,875 gallons of aircraft turbine engine lubricating oil. Defense Fuel Supply Center, Washington, D. C.

—Royal Lubricants Co., Inc., Hanover, N. J. $2,371,608. 2,224,104 one-quart cans and 83,875 gallons of aircraft turbine engine lubricating oil. Defense Fuel Supply Center, Washington, D. C.

30—General Aniline and Film Corp., Binghamton, N. Y. $2,642,700. 132,846 packages of X-ray film. Defense Personnel Support Center, Philadelphia, Pa.

ARMY

1—Union Carbide Corp., New York, N. Y. $1,748,250. 450,000 dry batteries for tactical radio sets (AN/TRC-8, 9 and 10). Chemway, N. C. Electronics Command (AMC), Philadelphia, Pa.

Capitol Radio Engineering Institute, Washington, D. C. $1,500,000. Classified services. Silver Spring, Md. Electronics Command (AMC), Fort Monmouth, N. J.

2 Blount Bros. Corp., Montgomery, Ala. $6,745,000. Modification of NASA SATURN IB launch complex 37 at Merritt Island, Fla. Canaveral District Corps of Engineers, Merritt Island, Fla.

6—Telecomputing Services, Inc., Panorama City, Calif. $1,300,000. Data reduction services. White Sands Missile Range, N. M. and Holloman AFB, N. M. White Sands Missile Range, N. M.

Del Webb & Norman Engineering Co., Los Angeles, Calif. $5,370,533. Construction of toxic altitude propulsion research facility. Edwards AFB, Calif. Engineer District, Los Angeles, Calif.

—Smith & Sapp Construction Co., Merritt Island, Fla. $1,277,709. Construction of a unified (S) band network communication station. Merritt Island. Canaveral Engineer District, Merritt Island, Fla.

7—Firestone Tire & Rubber Co., Akron, Ohio. $5,669,100. Repair parts for the M-60 tank. Noblesville, Ind. Army Tank Automotive Center (AMC), Warren Mich.

—Ross Aviation, Inc., Fort Rucker, Ala. $1,826,820. Training program in FY 66. Fort Rucker. Purchasing & Contracting Office, Fort Rucker, Ala.

8—H. L. Coble Construction Co., Greensboro, N. C. $3,176,720. Construction of family housing units. Fort Gordon, Ga. Engineer District, Savannah, Ga.

9—Belock Instrument Corp., College Point, N. Y. $1,203,984. Six HAWK simulator Stations. College Point. Army Missile Command, Huntsville, Ala.

—Elmer G. Wendt, Inc., Rio Vista, Calif. $1,153,273. Bank protection in connection with Sacramento River Project. Sacramento. Engineer District, Sacramento, Calif.

12—National Drug Co., Philadelphia Pa. $5,583,300. Continuation of a special project. Swift water, Pa. Army Research and Development Command, Office of the Surgeon General.

13—Buck & Donohue, Newark, N. J. $1,037,104. Work on the Smokes Creek Local Flood Protection Project. Near Lackawanna, N. Y. District Corps of Engineers, Buffalo, N. Y.

—Hardwick Bros. Co., Beardstown, Ill. $1,993,150. Work on Chariton River Levees, Missouri, Project. Near Glasgow, Mo. District Corps of Engineers, Kansas City, Mo.

14—Bell Helicopter Co., Hurst, Tex. $50,000,000. 255 UH-1B and 465 UH-1D helicopters. Hurst. Army Aviation Command, St. Louis, Mo.

15—Peter Kiewit Sons Co., Vancouver, Wash. $3,029,662. Work on John Day Lock and Dam Project. Arlington, Ore. District Corps of Engineers, Walla Walla, Wash.

16—Watertown Arsenal, Watertown, Mass. $6,348,600. 360 M127 mounts for the Howitzer self propelled 155 mm M109 vehicle. Watertown. Project Manager, Combat Vehicles, Army Weapons Command, Rock Island, Ill.

—Doehler-Jarvis, National Lead Company, Pottstown, Pa. $1,333,389. 1,769,830 bomb body assemblies. Pottstown. Ammunition Procurement & Supply Agency, Joliet, Ill.

—Batesville Mfg. Co., Batesville, Ark. $1,058,986. 894,830 bomb metal parts. Batesville. Ammunition Procurement & Supply Agency, Joliet, Ill.

—Honeywell, Inc., Hopkins, Minn. $3,309,726. 894,830 bomb metal parts and 1,759,830 bomb body assemblies. New Brighton, Minn. Ammunition Procurement & Supply Agency, Joliet, Ill.

17—Eureka Williams Co., Bloomington, Ill. $1,347,607. Ordnance items. Bloomington. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—General Instrument Corp., Chicopee, Mass. $1,200,035. Ordnance items. Chicopee. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

21—General Electric Co., Pasco, Wash. $6,060,000. 4 KVA generators for the John Day Lock and Dam Project. Schenectady, N. Y. District Corps of Engineers, Walla, Walla, Wash.

—Jackes-Evans Mfg. Co., St. Louis, Mo. $1,143,777. Links for 7.62 mm cartridge belts. St. Louis. Frankford Arsenal (AMC), Philadelphia, Pa

22—SCM Corp., Deerfield, Ill. $1,100,011. Teletypewriter sets and ancillary items. Deerfield. Army Electronics Command (AMC), Philadelphia, Pa.

—Collins Radio Co., Dallas, Tex. $1,200,000. Air-to-ground radio communication sets. Dallas. Procurement Office (AMC), Fort Monmouth, N. J.

23—Raulee, Inc., Miami, Fla. $3,280,600. Work on Central & Southern Florida Flood Control Project. Martin County, Fla. District Corps of Engineers, Jacksonville, Fla.

—Reynolds & Smith, Inc., Moore Haven, Fla. $1,502,340. Construction and excavation work on Central and Southern Florida Flood Control Project. Glade and Hendry Counties, Fla. District Corps of Engineers, Jacksonville, Fla.

26—Parke Construction Co., Atlanta, Ga. $4,085,690. Construction of 249 family housing units. Fort Jackson, S. C. District Corps of Engineers, Savannah, Ga.

—Magnavox Co., Fort Wayne, Ind. $18,922,425. Radio receivers. Fort Wayne and Urbana, Ill. Army Electronics Command (AMC), Philadelphia, Pa.

—Booz-Allen Applied Research Inc., Chicago, Ill. $1,199,883. FY 66 studies and analyses for a Combined Army Research Office program. Fort Leavenworth, Kan. Los Angeles Procurement District (AMC), Pasadena, Calif.

29—Green Construction Co. & Winston Bros. Co., Seattle, Wash. $7,397,977. Work on Lower Granite Lock and Dam Project. Garfield and Whitman Counties, Wash. District Corps of Engineers, Walla Walla, Wash.

Western Electric Co., Burlington, N. C. $1,603,032. Parts for the NIKE HERCULES missile. Burlington. Army Missile Command (AMC), Huntsville, Ala.

—SCM Corp., Deerfield, Ill. $1,139,264. Teletypewriter sets. Army Electronic Command (AMC), Philadelphia, Pa.

30—Harvey Aluminum Sales, Inc., Torrance, Calif. $2,768,742. Classified ammunition. Torrance. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—Thiokol Chemical Corp., Bristol, Pa. $3,081,524. Repair parts for PERSHING missiles. Marshall, Tex. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—I.B.M. Corp., Washington, D. C. $4,100,000. Classified electronics equipment Fort Meade, Md. Army Electronics Command (AMC), Fort Meade, Md.

—Kaiser Jeep Corp., Toledo, Ohio. $61,745,592. 10,000 trucks. South Bend, Ind. Army Mobility Command (AMC), Warren Mich.

—Hupp Corp. Canton, Ohio. $17,550,000. 10,000 multi-fuel engines for 2½-ton trucks. Canton. Army Mobility Command (AMC), Warren, Mich.

—General Motors Corp., Cleveland, Ohio, $4,240,700. Production engineering, supply and services on the XM551 vehicle, Cleveland. Procurement District (AMC), Cleveland, Ohio.

—Voron Electronics Corp., Philadelphia, Pa. $1,966,188. Radio sets. Philadelphia. Army Electronics Command, Fort Monmouth, N. J.

—Consolidated Diesel Electric Corp., Stamford, Conn. $2,452,320. 195 tractor trucks (less engines, transmissions and axles). Stamford. Army Tank Automotive Center (AMC), Warren, Mich.

Ford Motor Co., Dearborn, Mich. $15,627,990. 7,000 utility trucks. Highland Park, Mich. Army Mobility Command (AMC), Warren Mich.

—Continental Motors Corp., Muskegon, Mich. $3,008,880. 7,000 engines for utility trucks. Muskegon. Army Mobility Command (AMC), Warren, Mich.

—FMC Corp., Charleston, W. Va. $12,322,368. 643 M113 vehicles and spare parts. Charleston. Army Tank Automotive Center (AMC), Warren, Mich.

—General Electric Co., Erie, Pa. $2,306,150. 80-ton meter gauge, electric diesel locomotive. Erie. Army Mobility Command (AMC), Warren, Mich.

—Collins Radio Co., Cedar Rapids, Iowa. $2,188,832. 1,168 radio receiving sets. Cedar Rapids. Army Electronics Command, Philadelphia, Pa.

—Page Aircraft Maintenance Inc., Lawton, Okla. $12,265,837. Maintenance of rotary and fixed-wing aircraft. Fort Rucker, Ala. Contracting Office, Fort Rucker, Ala.

—Collins Radio Co., Cedar Rapids, Iowa. $1,434,440. Automatic direction finder sets. Cedar Rapids. Army Electronics Command, Philadelphia, Pa.

—Standard Container, Inc., Montclair, N. J. $1,352,119. Modification for ammunition boxes. Homersville, Ga. Frankford Arsenal (AMC), Philadelphia, Pa.

NAVY

1—Otis Elevator Co., Stamford, Conn. $1,262,371. Two passive electronic countermeasures (ECM) operator trainers. Stamford. Naval Training Device Center, Port Washington, N. Y.

—Gibbs & Cox, Inc., New York, N. Y. $8,374,706. Design services in connection with amphibious command vessel (AGC-19). New York City. Naval Shipyard, Philadelphia, Pa.

—Western Electric Co., Inc., New York, N. Y. $2,373,556. Shipboard weapon control equipment for TARTAR missiles. Burlington, N. C. Bureau of Naval Weapons.

—Curtiss-Wright Corp., Wood-Ridge, N. J. $1,408,159. Engineering services for J-65 aircraft engines. Wood-Ridge. Bureau of Naval Weapons.

—Babcock Electronics Corp., Costa Mesa, Calif. $1,440,000. Prototype models of shore-based transmitters. Costa Mesa. Bureau of Naval Weapons.

—RCA, Camden, N. J. $6,507,469. Tropospheric scatter communications systems. Camden. Bureau of Ships.

—Hughes Aircraft Co., Fullerton, Calif. $3,352,735. Shipboard satellite communications sets with associated equipment. Fullerton. Bureau of Ships.

—Vickers, Inc., St. Louis, Mo. $1,486,830. Automatic shipboard degaussing (magnetic reduction) systems. St. Louis. Bureau of Ships.

—Westinghouse Electric Corp., Pittsburgh, Pa. $3,288,300. Design and furnishing of reactor plant components for nuclear powered ships. Pittsburgh. Bureau of Ships.

—Control Data Corp., Minneapolis, Minn. $1,122,732. One data processing set and associated equipment. Minneapolis. Bureau of Ships.

—Douglas Aircraft Co., Inc., Long Beach, Calif. $2,073,387. Bomb rack and bomb hoist adapters. Torrance, Calif. Bureau of Naval Weapons.

—Lockheed Missiles and Space Co., Sunnyvale, Calif. $30,609,986. Tactical engineering services on POLARIS missile system. Sunnyvale. Special Projects Office.

2—Raytheon Co., Lexington, Mass. $9,222,152. Missile guidance systems for F-4B and F4C aircraft. Waltham, Mass. and Bristol, Tenn. Bureau of Naval Weapons.

—William E. Arnold Co., Jacksonville, Fla. $2,268,300. Construction of an aircraft maintenance hangar. NAS, Cecil Field, Fla. Director, Southeast Div., Bureau of Yards and Docks.

—Howard Research Corp., Arlington, Va. $1,784,000. Engineering and support services of Fleet Ballistic Missile training installations. Arlington. Special Projects Office.

—General Electric Co., Pittsfield, Mass. $2,635,361. Logistics and engineering support services for POLARIS MK 80 fire control system. Pittsfield. Special Projects Office.

—Honeywell Inc., St. Petersburg, Fla. $3,858,065. Repair of POLARIS components. St. Petersburg. Special Projects Office.

—Vitro Corp. of America, Silver Spring, Md. $15,929,496. Engineering service on POLARIS fleet ballistic missile weapons system. Silver Spring. Special Projects Office.

—International Telephone & Telegraph Corp., Nutley, N. J. $5,296,105. Furnish, install and checkout an underwater tracking control system. Underwater Tactical Range off Kauai, Hawaii. Bureau of Naval Weapons.

—National Co., Inc., Melrose, Mass. $2,815,381. Shipboard radio receiving sets. Melrose. Bureau of Ships.

—American Bosch Arma Corp., Philadelphia, Pa. $1,666,262. Weapons control switching equipment for installation aboard naval surface ships. Philadelphia. Bureau of Ships.

—Sperry Rand Corp., Long Island City, N. Y. $9,758,280. Shipboard gun fire control system components and related equipment. Long Island City. Bureau of Naval Weapons.

—Ryan Aeronautical Co., San Diego, Calif. $1,034,055. FIREBEE target drones. San Diego. Bureau of Naval Weapons.

—Thiokol Chemical Corp., Denville, N. J. $10,577,000. Rocket engines. Lake Denmark, N. J. Bureau of Naval Weapons.

—Sparton Corp., Jackson, Mich. $5,108,427. Sonobuoys. Jackson. Bureau of Naval Weapons.

—Collins Radio Co., Cedar Rapids, Iowa. $10,204,504. Communication-navigation-identification systems for Navy and Air Force aircraft. Cedar Rapids. Bureau of Naval Weapons.

—Texas City Refining Co., Texas City, Tex. $8,700,000. Two year charter of the SS THE CABINS for use in carrying petroleum products. Military Sea Transportation Service.

—Charles Kurz and Co., Inc., Philadelphia, Pa. $8,000,000. Use of the SS FORT FETTERMAN for five years to carry petroleum products. Military Sea Transportation Service.

6—Lockheed Missiles & Space Co., Sunnyvale, Calif. $12,395,020. Engineering and logistic support for the POLARIS missile. Sunnyvale. Special Projects Office.

—Aero Corp., Lake City, Fla. $1,397,550. Progressive maintenance including component overhaul of C-54 aircraft. Lake City. Bureau of Naval Weapons.

—Douglas Aircraft Co., Inc., Long Beach, Calif. $1,120,506. Bomb release rack system for Navy aircraft. Long Beach. Bureau of Naval Weapons.

—Chromcraft Corp., St. Louis, Mo. $8,480,697. MIGHTY MOUSE rocket launchers for the Navy and Air Force. St. Louis. Bureau of Naval Weapons.

7—Sperry Rand Corp., Syosset, Long Island, N. Y. $4,423,000. Repair of navigation systems and subsystems. Syosset. Bureau of Ships.

—Fairchild Hiller Corp., St. Augustine, Fla. $3,193,985. Overhaul, including components, of P-5 MARLIN aircraft. St. Augustine. Bureau of Naval Weapons.

—Minneapolis Honeywell, Inc., Hopkins, Minn. $9,934,074. Mark 46 torpedoes. Hopkins. Bureau of Naval Weapons.

—North American Aviation, Inc., Anaheim, Calif. $1,753,000. Repair of gyroscopes on Ship Inertial Navigation System equipment. Anaheim. Bureau of Ships.

—North American Aviation, Inc., Anaheim, Calif. $3,265,000. Repair of Ship Inertial Navigation System equipment. Anaheim. Bureau of Ships.

8—Sperry Rand Corp., Syosset, Long Island, N. Y. $7,170,000. Engineering and data processing services for FY 66 POLARIS technical assistance program. Bureau of Ships.

—North American Aviation, Inc., Anaheim, Calif. $1,427,000. To conduct a study and test program of Ship Inertial Navigation System equipment. Anaheim. Bureau of Ships.

—Western Electric Co., Inc., New York, N. Y. $1,080,000. Modification kits for shipboard gun fire control systems. Burlington, N. C. Bureau of Naval Weapons.

—Hughes Aircraft Co., Culver City, Calif. $17,000,000. PHOENIX missile systems after design completion. Culver City. Bureau of Naval Weapons.

9—Amcel Propulsion, Asheville, N. C. $1,042,875. MK 24 parachute flares. Swannanoa, N. C. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—General Dynamics, Pomona, Calif. $23,800,000. FY 66 funding for pilot production of the medium range standardization missile. Pomona. Bureau of Naval Weapons.

—Northwestern Marine Iron Works, Portland, Ore. $8,493,656. Construction of two oceanographic research ships. Swan Island, Portland. Bureau of Ships.

—General Electric, Pittsfield, Mass. $1,163,121. Research and development on POLARIS fire control and guidance systems. Pittsfield. Special Projects Office.

12—Alcoa Aluminum of America, Pittsburgh, Pa. $1,095,990. Mat extrusions for AM-2 type airfield landing mats. Lafayette, Ind. Naval Air Engineering Center, Philadelphia, Pa.

—ITT Gilfillan, Inc., Los Angeles, Calif. $2,570,400. Design, development, fabrication and testing of a micro-miniaturized data programmer unit for use on radar equipment. Azusa, Calif. Bureau of Ships.

13—Pratt & Whitney Aircraft (United Aircraft Corp.), East Hartford, Conn. $1,785,042. Miscellaneous spare parts for P2V5 and P2V7 aircraft engines. East Hartford. Navy Aviation Supply Office, Philadelphia, Pa.

—Farmers Tool & Supply Co., Denver, Colo. $2,775,114. Wings and rolleron assemblies for sidewinder 1-C missiles. Denver. Naval Propellant Plant, Indian Head, Md.

—Lear Siegler, Inc., Grand Rapids, Mich. $1,104,058. Bomb computer systems for Navy aircraft. Grand Rapids. Bureau of Naval Weapons.

15—Loral Electronics Systems, Bronx, N. Y. $3,960,166. Components for doppler navigation radar sets in various production aircraft. Bronx. Navy Purchasing Office, Washington, D. C.

—General Electric Co., Seattle, Wash. $2,854,000. Main propulsion turbines for ships. West Lynn, Mass. Puget Sound Naval Shipyard, Bremerton, Wash.

—Balfield Industries, Inc., Carrollton, Tex. $1,454,340. Tow target launchers. Carrollton. Navy Purchasing Office, Washington, D. C.

16—Lockheed Missiles and Space Co., Sunnyvale, Calif. $4,720,475. Repair of POLARIS hardware. Sunnyvale. Special Projects Office.

—Robert L. Guyer Co., Lampasas, Tex. $1,276,900. Conversion, rehabilitation and improvements to housing. Naval Auxiliary Air Station, Kingsville, Tex. Director, Gulf Div., Bureau of Yards and Docks.

19—Boeing Aircraft, Morton, Pa. $6,971,159. Components for rotor blades and transmissions for helicopters. Morton. Bureau of Supplies and Accounts.

—Chromcraft Corp., St. Louis, Mo. $2,000,400. MIGHTY MOUSE rocket launchers. St. Louis. Bureau of Naval Weapons.

—Ling-Temco-Vought, Inc., Dallas, Tex. $6,500,000. Conversion of RF-8A aircraft to an RF-8G configuration. Dallas. Bureau of Naval Weapons.

20—Intercontinental Mfg. Co., Garland, Tex. $3,134,746. MK 82 bomb bodies. Garland. Bureau of Supplies and Accounts.

—Northrop Corp., Anaheim, Calif. $1,051,671. Tactical engineering services on POLARIS missile checkout equipment. Anaheim. Special Projects Office.

—Stanwick Corp., Washington, D. C. $2,288,682. Technical services for the development and evaluation of a maintenance data documentation plan for use in repairing shipboard equipment. Norfolk and Arlington, Va. Bureau of Ships.

—Hayes International Corp., Dothan, Ala. $1,052,467. Services and materials to perform progressive maintenance on C-131 and C-118 aircraft. Dothan. Bureau of Naval Weapons.

—American Machine and Foundry Co., York, Pa. $17,026,627. MK-82 bomb bodies. York. Bureau of Supplies and Accounts.

—Newport News Shipbuilding and Dry Dock Co., Newport News, Va. $1,920,000. Design of a nuclear powered aircraft carrier, Newport News. Bureau of Ships.

—General Dynamics Corp. Groton, Conn. $1,502,531. Ball valves for nuclear submarines. Groton and Montreal, Canada. Naval Supply Center, Oakland, Calif.

21—Grumman Aircraft Engineering Corp., Bethpage, L. I., N. Y. $4,516,500. Research and development of the integrated ECM system for EA-6B aircraft. Bethpage. Bureau of Naval Weapons.

—United Aircraft Corp., Pratt and Whitney, East Harford, Conn. $6,700,000. Continue development of TF-30 engines and components. East Harford. Bureau of Naval Weapons.

22—Motorola, Inc. Scottsdale, Ariz. $2,066,955. Guidance and Control systems for SIDEWINDER missiles. Scottsdale. Bureau of Naval Weapons.

—Admiral Corp., Chicago, Ill. $4,068,212. Ultra high frequency radio sets for use in Navy and Army aircraft. Chicago. Navy Purchasing Office, Washington, D. C.

—North American Aviation, Inc., Anaheim, Calif. $4,892,031. Ship Inertial Navigation Systems and associated equipment. Anaheim. Bureau of Ships.

23—Northrop Corp., Anaheim, Calif. $1,128,707. Classified logistic and engineering services for POLARIS. Anaheim. Special Projects Office.

26—Curtiss-Wright Corp., Wood-Ridge, N. J. $2,595,152. Spare parts for Air Force R-1820 engines. Wood-Ridge. Navy Aviation Supply Office, Philadelphia, Pa.

—Sperry Rand Corp., Syosset, L. I., N. Y. $1,601,750. Fabrication, testing, furnishing and installation of Ship Inertial Navigation System test sets at the Module Maintenance Facility. Charleston, S. C. Bureau of Ships.

—Arthur D. Little, Inc., Cambridge, Mass. $1,766,600. Research and development program to develop ship working plans utilizing a computer plotter technique. Cambridge. Bureau of Ships.

—Curtiss-Wright Corp., Wood-Ridge, N. J. $3,351,803. Aircraft engine spare parts, Wood-Ridge. Navy Aviation Supply Office. Philadelphia, Pa.

27—General Dynamics Corp., Groton, Conn. $40,568,975. Overhaul and A-3 POLARIS missile retrofit of USS THEODORE ROOSEVELT (SSBN-600) and USS ABRAHAM LINCOLN (SSBN-602), Groton. Bureau of Ships.

28—Curtiss-Wright Corp., Wood-Ridge, N. J. $1,460,932. Spare parts for the R-1820 and R-3350 aircraft engine. Wood-Ridge. Navy Aviation Supply Office, Philadelphia, Pa.

29—Lockheed Missiles and Space Co., Sunnyvale, Calif. $7,000,000 and $7,358,645. Research and development on POLARIS re-entry system; Flight tests of the MK-12 re-entry vehicle in a POLARIS environment. Sunnyvale. Special Projects Office.

30—Jay De Construction Co., Inc., Apple Valley, Calif. $1,230,000. Rehabilitation and conversion of housing. Marine Corps Supply Center, Barstow, Calif. Director, Southwest Div., Bureau of Yards and Docks.

—Treadwell Corp., New York, N. Y. $1,693,216. Oxygen generators for submarines. New York City. Bureau of Ships.

—Curtiss-Wright Corp., Wood-Ridge, N. J. $2,268,683. Spare parts for J65-W-16A and J65-W-18A jet engines for A4A and A4B aircraft. Wood-Ridge. Navy Aviation Supply Center, Philadelphia, Pa.

—Western Electric Co., New York, N. Y. $1,838,857. Oceanographic research. Whippany, N. J. Navy Purchasing Office, Washington, D. C.

AIR FORCE

1—Boeing Co., Seattle, Wash. $3,728,410. Engineering Services in support of the MINUTEMAN weapon system. Seattle, Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—Bendix Corp., Oxnard, Calif. $3,126,146. Operation and Maintenance of Western Test Range communications center, Wheeler AFB, Hawaii and Eniwetok. Air Force Test Range (AFSC), Vandenberg AFB, Calif.

—Air International, Miami, Fla. $1,378,414. Inspection and repair of C-147 aircraft. Miami. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—Lockheed Aircraft Corp., Ontario, Calif. $13,600,000. FY 66 maintenance services for F-104G aircraft. Luke AFB, Ariz. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—RCA, Camden, N. J. $27,200,000. Material and services for operation of Ballistics Missile Early Warning System. Thule AFB, Greenland, and Clear Missile Early Warning Site, Alaska. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—Pan American World Airways, Inc., New York, N. Y. $10,000,000. Management operation and maintenance services. Eastern Test Range (AFSC), Patrick AFB, Fla.

—North American Aviation, Inc., Anaheim, Calif. $2,001,136. FY 66 engineering services in support of MINUTEMAN weapon system. Anaheim. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—North American Aviation Inc., Anaheim Calif. $10,000,000. Design and development of a post boost control system as part of the MINUTEMAN ICBM program. Anaheim. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

2—Western Electric Co., Inc., New York, N. Y. $3,590,000. Implementation, testing and related services for the back up interceptor control system (BUIC). New York City. Electronics Systems Div. (AFSC), L. G. Hanscom Field, Mass.

—Boeing Co., Morton, Pa. $1,260,000. Engineering services for CH-47 helicopters. Morton. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—AVCO Corp., Wilmington, Mass. $1,700,047. Work on a classified project. Wilmington. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

6—Marquardt Corp., Van Nuys, Calif. $2,000,000. Supersonic RAMJET flight test program. Van Nuys. Systems Engineering Group (AFSC), Wright-Patterson AFB, Ohio.

—Tele-Signal Corp., Hicksville, N. Y. $1,470,000. Air-ground communications equipment. Hicksville. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—General Precision, Inc. Hillcrest, Binghampton, N. Y. $1,635,359. Depot maintenance and repair of flight simulators. Binghampton. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—General Dynamics, San Diego, Calif. $1,301,721. Production of orbital vehicles and related equipment. San Diego. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—Kollsman Instrument Corp., Elmhurst, N. Y. $1,350,202. Procurement of spare parts for mapping and survey systems. Elmhurst. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Aerospace Corp., El Segundo, Calif. $4,046,000. General systems engineering and technical direction of ballistic missile and space programs. El Segundo. Space Systems Div. (AFSC), Los Angeles, Calif.

—Giddings & Lewis Machine Tool Co., Fond du Lac, Wis. $2,539,600. Machine tools. Fond du Lac. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Union Carbide Corp., Parma, Ohio. $2,000,000. Development of a technical training program to include training materials. Parma. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Teledyne, Inc., Gardena, Calif. $1,160,218. Production of hydraulic test stands in support of F-4C aircraft after completion by formal advertising. Gardena. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

7—Federal Electric Corp., Paramus, N. J. $24,839,500. Maintenance and operation of the Defense Early Warning System. Canada, Alaska and Greenland. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—Douglas Aircraft Co., Inc., Santa Monica, Calif. $1,260,000. GENIE rocket motors. Sacramento, Calif. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—General Precision, Inc., Glendale, Calif. $1,270,000. Data processing programming services. Glendale. Electronics Systems Div. (AFSC), L. G. Hanscom Field, Mass.

8—Collins Radio Co., Richardson, Tex. $1,468,610. Production of transportable communications systems. Richardson. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—Boeing Co., Wichita, Kan. $3,200,000. FY 66 B-52 engineering flight test program. Wichita. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—General Electric Co., Syracuse, N. Y. $8,530,750. Operation, maintenance and logistics support of space track facilities. Shemya, Alaska and Diyarbikar, Turkey. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—Garrett Corp., Phoenix, Ariz. $1,196,341. Modification kits for overhaul of aircraft starters. Phoenix. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—RCA, Moorestown, N. J. $2,570,450. Operation, maintenance and logistics support of a space track facility. Moorestown. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—Bendix Corp., Baltimore, Md. $1,485,803. Communications equipment, spare parts and technical data. Baltimore. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

9—Lockheed Aircraft Service Co., Jamaica, N. Y. $2,826,000. Modification and maintenance of EC-121 aircraft. Jamaica. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

13—Raytheon Co., Bedford, Mass. $1,271,324. Operation and maintenance of Rampart Radar System, Holloman AFB, N. M. Air Force Missile Development Center (AFSC), Holloman AFB, N. M.

—Continental Electronics Mfg. Co., Dallas, Tex. $1,536,302. Operation and maintenance of two UHF radar sites. Holloman AFB, N. M. Air Force Missile Development Center (AFSC), Holloman AFB, N. M.

—General Dynamics, Fort Worth, Tex. $1,340,871. Operation and maintenance of radar target scatter site. Holloman AFB, N. M. Air Force Missile Development Center (AFSC), Holloman AFB, N. M.

—Douglas Aircraft Co., Tulsa, Okla. $11,364,185. Modification and maintenance of B-52 aircraft. Tulsa. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—RCA Service Co., Camden, N. J. $12,365,742. Operation and maintenance of White Alice Communication System. Anchorage, Alaska. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

14—Ling-Temco-Vought, Inc., Greenville, Tex. $1,822,751. Inspection and repair of C-124 aircraft. Greenville. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—Hayes International Corp., Birmingham, Ala. $4,005,935. Inspection and repair of C-124 aircraft. Birmingham. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—Hayes International Corp., Birmingham, Ala. $3,290,826. Inspection and repair of C-97 and KC-97 aircraft. Birmingham. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—Raytheon Co., Santa Barbara, Calif. $2,874,265. Airborne Electronic Equipment. Santa Barbara. Warner-Robins Air Materiel Area, Robins AFB, Ga.

15—Onsrud Machine Works, Inc., Niles, Ill. $2,287,160. 4 heavy milling machines. Niles. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

16—IBM Corp., Washington, D. C. $1,639,304. Electronic data processing equipment. Poughkeepsie, N. Y. 2750th Air Base Wing, Wright-Patterson AFB, Ohio.

—North American Aviation, Inc., Anaheim, Calif. $9,000,000. Production of guidance and control systems for MINUTEMAN II. Anaheim. Headquarters, Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—Martin-Marietta Corp., Orlando, Fla. $1,038,000. Production of communications equipment for support of F-111, F-4 and A6A aircraft. Orlando. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

19—Boeing Co., Wichita, Kan. $3,560,050. Kits for modification of B-52 aircraft equipment. Wichita. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—I.T.&T. Technical Services, Inc., Paramus, N. J. $1,200,000. Operation and maintenance at Air Force Plant #42 for FY 66. Palmdale, Calif. San Bernardino Air Materiel Area (AFLC), Norton AFB, Calif.

21—**American Machine & Foundry Co.**, York, Pa. $1,680,889. Production of aircraft arresting barriers. York. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

—**Martin Marietta Corp.**, Denver, Colo. $4,775,000. Supplies and services to support the TITAN II long-term readiness and environmental program. Denver. San Bernardino Air Materiel Area (AFLC), Norton AFB, Calif.

22—**Boeing Co.**, Wichita, Kan. $2,000,000. Work on B-52 aircraft. Wichita. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—**Atlantic Research Corp.**, Alexandria, Va. $2,419,000. Production of meterological sounding rockets and related equipment. Gainesvile and Alexandria, Va. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**Hayes International Corp.**, Birmingham, Ala. $1,419,705. Inspection and repair of C-118 aircraft. Dothan, Ala. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

23—**Lockheed Aircraft Corp.**, Marietta, Ga. $1,660,970. Power plant assemblies for C-130 and HC-130 aircraft. Chula Vista, Calif. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—**Aerojet-General Corp.**, Azusa, Calif. $2,000,000. Design, manufacture and provision of radiometric equipment. Azusa. Space Systems Div. (AFSC), Los Angeles, Calif.

—**Hoffman Electronics Corp.**, El Monte, Calif. $1,358,500. Production of communication equipment for F-5, T-38 and CH-3C aircraft. El Monte Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

26—**United Aircraft Corp.**, East Hartford, Conn. $1,125,000. Development work on engines for C-5A aircraft. East Hartford. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Goodyear Aerospace Corp.**, Akron, Ohio. $2,216,814. Production of tactical reconnaissance processing and interpretation equipment Akron. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**General Electric Co.**, Cincinnati, Ohio. $1,450,000. Development work on engines for C-5A aircraft. Cincinnati. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**General Electric Co.**, Philadelphia, Pa. $6,600,000. Research and development of the Mark 12 re-entry program. Philadelphia. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

27—**Boeing Co.**, Seattle, Wash. $2,851,000. Modification of early MINUTEMAN missiles. Rapid City, S. D. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Philco Corp.**, Willow Grove, Pa. $1,692,384. Procurement of electronic data processing systems. 2750th Air Base Wing (AFLC), Wright-Patterson AFB, Calif.

—**Sperry Rand Corp.**, St. Paul, Minn. $1,000,000. Development of digital computers for airborne guidance systems. St. Paul. Ballistic Systems Div. (AFLC), Norton AFB, Calif.

28—**LTV Electrosystems, Inc.**, Greenville, Tex. $2,563,641. Inspection and repair of F-102 series aircraft. Greenville, S. C. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

—**General Electric Co.**, West Lynn, Mass. $2,496,000. Aircraft engines, spare parts and related ground equipment. West Lynn. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Battelle Memorial Institute**, Columbus, Ohio. $2,420,000. Classified program work. Columbus. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

29—**Garrett Corp.**, Phoenix, Ariz. $3,410,025. Modification kits used in the overhaul of aircraft starters. Phoenix. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

30—**AVCO Corp.**, Stratford, Conn. $45,214,944. Production of T-58 series engines for Army aircraft. Stratford. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**General Electric Co.**, Cincinnati, Ohio. $2,519,175. Design of lightweight lift engines. Cincinnati. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Boeing Co.**, Seattle, Wash. $6,500,000. Design, development and test of missile trajectory prediction systems and related equipment. Seattle. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Lockheed Missiles and Space Co.**, Sunnyvale, Calif. $6,510,349. Research and development work on a space program. Sunnyvale. Space Systems Div. (AFSC), Los Angeles, Calif.

—**Hayes International Corp.**, Birmingham, Ala. $1,797,000. Inspection and repair as necessary of C-130 aircraft. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

Army To Get New Diving Equipment

Two new diving sets are being type classified for military procurement by the U.S. Army Materiel Command Engineer Research and Development Laboratories, Fort Belvoir, Va.

The new diving sets are self-contained, open and closed circuit units, composed of commercially available components and will fill immediate requirements of the Army Special Forces.

The open circuit set operates to depths of more than 200 feet and eliminates the depth limitation and inherent dangers involved in oxygen-rebreathing SCUBA operations.

The closed circuit set operates at a depth of 25 feet but is valuable because it does not cause tell-tale surface bubbles.

Future Army procurement of diving equipment will depend on results of studies now being conducted to determine complete needs.

Mauler Program Terminated

The Department of the Army is terminating its development program for the Mauler, which was to serve as a mobile air defense missile system for the protection of front line troops against high speed enemy aircraft and short range missiles and rockets.

Technical difficulties associated with mounting a fire control radar and guided missile launcher on the same vehicle caused significant delays and increased costs. Development costs to complete Mauler would have been in excess of $180 million.

As a result of problems encountered, extensive re-evaluation of Mauler was completed in the spring. This re-evaluation, taking into account recent improvements in the Hawk missile system and the promise of new types of forward area defense systems significantly simpler and cheaper than Mauler, led the Army to question the wisdom of continuing the development of Mauler to deployment. The new systems involve combinations of automatic guns and the Chaparral (Sidewinder missiles mounted on a self-propelled vehicle).

Thus, although the technical feasibility of the Mauler system has now been established, the Army has decided to select the alternative systems for deployment.

Effort under the present Mauler contract will be completed prior to Sept. 30, 1965. Studies are under way to determine what continued development of Mauler components may be of value to the U.S. or allied nations. Such elements as the infrared acquisition unit, acquisition radar and Mauler fuse show promise for such use. In addition, technology and miniaturization techniques developed during the Mauler program will be valuable in developing future compact air defense weapons systems.

General Dynamics Corporation, at Pomona, Calif., has been the prime contractor for the Mauler.

Improved Surveillance System Proposed for Ryukyus

The Air Force has revealed that an airspace surveillance and weapons control system, similar in function to one being used in West Germany, is proposed for installation in the Ryukyu Islands, southwest of Japan.

Through the use of semi-automatic data processing, the Ryukyus Air Defense System (RADS) will pick up air space intruders in its area almost instantly, strengthening considerably the defense capabilities of the U.S. Air Force in that area.

The system will consist of radar, ultra-fast communications, data processors, display consoles and command posts where decision makers can direct manned or unmanned weapon interception. Returning aircraft can be directed home or to alternate bases through use of the system.

Although the Air Force has not yet specified the system's equipment, it has emphasized that "off the shelf" engineering techniques and component items be used rather than have the system based on new research and development. The finished system will have to meet maintenance and performance criteria and be within an acceptable cost range.

Contractors will study Air Force goals for the projected system's performance, prepare design plans and select hardware they consider necessary to perform required functions.

The Air Force Systems Command's Electronic Systems Division, Hanscom Field, Mass., is handling acquisitions for RADS.

OFFICE OF THE SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

OFFICIAL BUSINESS

POSTAGE AND FEES PAID

SYNCOM Communications Satellites Transferred to DOD

Control of SYNCOM II and SYNCOM III communications satellites has been transferred from the National Aeronautics and Space Administration (NASA) to the Department of Defense with specific assignments given to the Air Force and the Army and support activities assigned to the Navy.

Last December Secretary of Defense Robert S. McNamara directed the Defense Communications Agency (DCA) to implement a memorandum of understanding between DOD and NASA after the civilian space agency reported it had completed experimental research and development activities with the two synchronous satellites.

Three telemetry and command stations for support of SYNCOM will be operated by the Air Force. These stations are located in the Seychelle Islands (Indian Ocean), Hawaii and Guam, and will maintain precision control and positioning of the satellites.

The Army will be responsible for the earth communications facilities that are used with the SYNCOM satellites except for two shipboard terminals operated by the Navy. The Army Satellite Communications Agency will continue to conduct communication testing. The Army's Strategic Communications Command will man and operate all ground terminals.

The earth complex is composed of a fixed station at Camp Roberts, Calif.; transportable stations at Hawaii; Clark Air Base, Republic of the Philippines; Asmara, Eritrea; and two transportable stations located in Southeast Asia.

The facilities will be under the direction of the Defense Communications Agency.

The USNS Kingsport, a shipboard communication terminal, is presently employed to support technical tests conducted via the SYNCOM satellites.

Test traffic, both voice and teletype, has been passed successfully between all stations.

SYNCOM III, launched Aug. 19, 1964, will be maintained at a position between 170° and 174° East longitude and SYNCOM II, launched July 26, 1963, will drift between 65° and 80° East Longitude. Both are in orbit at an altitude of about 22,300 miles.

NASA will continue to receive reports on the telemetry from the two satellites from DOD and will continuously evaluate their performance in space.

Technical Data Study Contract Awarded

The Defense Supply Agency has awarded a $168,000 contract to North American Aviation, Inc., to determine how scientists and engineers acquire and use technical data in the nation's industrial research and development laboratories.

The study is being conducted by DOD to increase the Department's capabilities to serve the Government, as well as the scientific and industrial communities. The new study supplements a similar in-house study recently completed which was designed to determine how DOD scientists and engineers use technical information.

North American's Space and Information Systems Division, at Downey, Calif., will conduct the nationwide six-month survey. The Office of the Director of Technical Information, Office of the Director of Defense Research and Engineering, and the Advanced Research Projects Agency will administer the survey. The Defense Documentation Center will monitor it.

Approximately 100 selected industrial installations throughout the country will be visited for the purpose of interviewing research, development, test and evaluation scientists and engineers. The National Security Industrial Association assisted DOD in selecting the installations to be visited.

DEFENSE INDUSTRY BULLETIN

Volume 1 No. 9 September 1965

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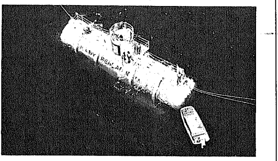
Sealab II



SEALAB II, the second phase of the Navy's "man-in-the-sea" program, begins as an undersea laboratory is submerged off the coast of Southern California.

While submerged at a depth of 210 feet, the 57-foot habitat will be occupied by three 10-man teams consisting of both Navymen and civilian scientists. Each group will remain submerged for 15 days at a time.

The teams will conduct experimental salvage operations, marine biological studies and oceanographic reaerch projects. Personnel will also be given a series of physiological performance tests.

The 45-day undersea experiment, longest of its type yet attempted, began Aug. 26 under the sponsorship of the Office of Naval Research. The first phase of SEALAB was conducted last year near Bermuda and lasted 11 days. (See article on Navy Deep Submergence Program on page 1.)

DEFENSE INDUSTRY

BULLETIN

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The purpose of the *BULLETIN* is to serve as a means of communication between the Department of Defense (DOD) and its authorized agencies and defense contractors and other business interests. It will serve as a guide to industry concerning official policies, programs and projects, and will seek to stimulate thought by members of the defense-industry team in solving the problems that may arise in fulfilling the requirements of the DOD.

Material in the *BULLETIN* is selected to supply pertinent unclassified data of interest to the business community. Suggestions from industry representatives for topics to be covered in future issues should be forwarded to the Business & Labor Division.

The *BULLETIN* is distributed each month to the agencies of Department of Defense, Army, Navy, and Air Force, and to representatives of industry. Request for copies should be addressed to the Business & Labor Division, OASD/PA, Room 2E813, The Pentagon, Washington, D.C. 20301, telephone, OXford 5-2709.

Contents of the magazine may be reprinted freely without requesting permission. Mention of the source will be appreciated.

Why Vietnam

In the foreword to "Why Vietnam" reprinted below, Preside Johnson introduces a report of vital significance to all America Published in magazine form, "Why Vietnam" is available from t Superintendant of Documents, U.S. Government Printing Offi Washington, D. C. 20402, at a price of 30 cents.

My fellow Americans:

Once again in man's age-old struggle for a better life and a world of peace, the wisdom, courage and compassion of the American people are being put to the test. This is the meaning of the tragic conflict in Vietnam.

In meeting the present challenge, it is essential that our people seek understanding, and that our leaders speak with candor.

I have therefore directed that this report to the American people be compiled and widely distributed. In its pages you will find statements on Vietnam by three leaders of your Government—by your President, your Secretary of State and your Secretary of Defense.

These statements were prepared for different audiences and they reflect the differing responsibilities of each speaker. The congressional testimony has been edited to avoid undue repetition and to incorporate the sense of the discussions that ensued.

Together, they construct a clear definition of America's role in the Vietnam conflict:

—the dangers and hopes that Vietnam holds for all free men
—the fullness and limits of our national objectives in a war we did not seek
—the constant effort on our part to bring this war we do not desire to a quick and honorable end.

Lyndon B. Johnson

Navy to Reactivate Thirty-Nine Ships and Landing Craft

Twenty-three ships and 16 landing craft in the U.S. Navy a National Defense Reserve Fleets will be activated to meet i creased requirements resulting from current operations in Sout east Asia.

The 39 ships and other units scheduled for activation and t Reserve Fleet from which they will come are:

Fleet Oiler TAPPAHANNOCK (AO-43)—National Defense R serve Fleet, Beaumont, Tex.

Attack Cargo Ship VIRGO (AKA-20)—National Defense R serve Fleet, Olympia, Wash. To be activated as an ammuniti ship (AE).

Attack Cargo Ship CHARA (AKA-58)—National Defense R serve Fleet, Astoria, Ore. To be activated as an ammunition s (AE).

Seventeen Tank Landing Ships (LST's)—Six from the Atlan and 11 from Pacific Reserve Fleet.

Three Gasoline Tankers (AOG's)—One from the Atlantic a two from the Pacific National Defense Reserve Fleet.

Sixteen Utility Landing Craft (LCU's)—Taken from both P cific and Atlantic Navy Reserve Fleets.

When activated, all vessels will be assigned as units of the U Pacific Fleet. Decisions regarding the assignment of private a Navy shipyards to conduct the activations are expected in the ne future.

The Deep Submergence Rescue Vehicle

by
Samuel Feldman
Head, Deep Submergence Vehicle Program
U. S. Navy Special Projects Office

In the past year, the Navy has taken a major step forward towards opening the door to the Inner Space of the Oceans. As the SPUTNIK event launched the United States into its vast space program, so it was that the unfortunate THRESHER disaster sparked and revitalized the Navy's interest in the ocean depths.

Shortly after the THRESHER went down with 129 men aboard in April 1963, the Secretary of the Navy established the Deep Submergence Systems Review Group (DSSRG) under Rear Admiral E. C. Stephan, USN (Ret.), to examine the Navy's capabilities for deep ocean rescue, search and recovery. After a thorough review, the DSSRG found that the Navy's capability to work in the deep ocean medium was extremely limited, and that had the THRESHER bottomed at her collapse depth, with hull intact, our existing rescue systems would have been inadequate.

As a result of recommendations of the DSSRG study, the Chief of Naval Material established the Deep Submergence Systems Project (DSSP) under the Director, Special Projects. In compliance with Specific Operational Requirements and Advanced Development Objectives issued by the Chief of Naval Operations, the DSSP program has been divided into four major elements:

I. Submarine Location, Escape and Rescue

Location. Provide the capability to locate a distressed submarine and retrieve data to assist investigators in determining the cause and nature of the casualty. Aids to investigation will be installed on all United States combatant submarines and will include such items as pingers, data capsule buoys and tethered radio buoys. Installation of these equipments will be phased with the normal overhaul cycle of the submarines.

Escape. A three-part program to improve the present submarine escape capability is planned:

- To increase the possibilities for survival of escaping personnel, immersion suits and one-man life rafts will be procured. These equipments will be purchased in sufficient quantity to provide suits and rafts for 110% of the submarine crew complement in each of the submarine's two escape compartments. The initial procurement will be completed during FY 1967.
- Free ascent escape will be improved by providing submarine personnel with more frequent training and by progressively increasing the training requirement from the present 50-foot ascents to a planned depth of 200 feet. Initially, a select group of trainees will receive 100-foot escape training and the effectiveness of this training studied and evaluated. Upon the successful conclusion of these studies, implementation of a 200-foot escape training program will commence.
- Open sea ascent, from depths up to 600 feet, will be conducted in FY 1969 to demonstrate the feasibility of emergency exit from a disabled submarine at greater depths.

Rescue. A new rescue system is being developed to permit the rescue of surviving submarine personnel under all weather conditions, under ice and at depths as great as submarine collapse depths. The overall rescue system will include three units, each unit containing two submersibles, a surface support ship and associated equipment. In order to provide rapid response to a disaster anywhere in the world, the rescue vehicle will be designed to be air transportable and will be carried to the scene of operations aboard a nuclear submarine in a "piggy-back" fashion. Each vehicle will have a crew of three men and be capable of transferring 12-14 survivors on each trip from the disabled submarine to the "mother" submarine.

II. Search and Small Object Recovery

Presently, more than 80% of the ocean volume lies beyond the reach of Navy operating capabilities. The development of this system will permit survey, investigations and recovery of small objects from depths to 20,000 feet—about 98% of the ocean floor. To evaluate technical concepts, a 6,000-foot search test vehicle will be constructed to be followed by two 20,000-foot operational search units. Each unit will be composed of two submersible vehicles and an associated surface vessel with support and checkout equipment. These units will provide the Navy a two-ocean, deep sea search and retrieval capability.

II. Man-in-the-Sea

The Man-in-the-Sea Program is aimed at extending man's capability of working under water—at greater depths and for longer durations of time. More specifically, the objectives of this part of the program are to perform the following types of work at continental shelf depths:

- Locate, identify and describe conditions of distressed submarines.
- Effect rapid and efficient submarine rescue and escape.
- Carry out underwater salvage and construction.
- Recover or neutralize objects of military importance.
- Inspect, maintain and repair underwater emplacements.
- Research, explore and exploit the continental shelf.

This program will provide man the capability of living and working in the deep sea environment at ambient pressure rather than at normal atmospheric conditions.

It is ultimately planned to extend this diving capability down to the physiological limits of man—which is now estimated between 600-1,000 feet.

IV. Large Object Salvage

Provide the capability to recover large objects, including sunken ships, requiring a deadweight lift of up to 1,000 tons from continental shelf depths (approximately 600-800 feet). To accomplish this mission, external lift will be supplied primarily by new sets of collapsible pontoons with a combined buoyancy of 1,000 tons. Underwater work will be accomplished by divers equipped with the appropriate tools and devices. The medical and physiological research and development required for

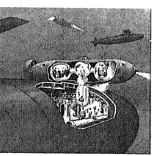


Figure 1.

safely conducting deep diving work will be provided by the Man-in-the-Sea Program. Additionally, feasibility studies and prototype development will be conducted to resolve the problems associated with salvage operations at submarine collapse depths and provide buoyancy for an external lift of 1,000 tons. Investigation, object preparation and rigging will be done by a manned submersible vehicle developed under the Rescue or Search Program. This system, with surface support equipments and vessels, will introduce a totally new salvage capability within the fleet.

The Rescue and Search Systems involve the development of two radically new small deep submersible vehicles. The rescue vehicle will have a depth range of about 6,000 feet and will be capable of rescuing personnel from a disabled submarine down to its collapse depth. The search vehicle will have a depth capability of 20,000 feet and be equipped with advanced search and manipulator devices to accomplish undersea work.

I shall describe herein the rescue vehicle for which a design and fabrication contract will be awarded in late 1965. We have recently issued a Request for Proposal soliciting from industry technical proposals for the design, fabrication, assembly and evaluation of the first prototype rescue vehicle.

The primary mission of the Rescue System is to rescue personnel from a sunken submarine in as rapid a response time as possible. In order to meet this mission, we have established an operational goal for providing an all-weather capability in which rescue operations could be accomplished within 24 hours of a distress signal alert. Because of the limitations imposed by surface sea conditions on the present Auxiliary Submarine Rescue Ship (ASR)—McCann Chamber system, it was decided that the complete rescue system be capable of operation totally submerged. This not only removed the free surface as a constraint but would also permit rescue operations under the ice.

In order to achieve this rapid response time, all-weather capability, we are designing a vehicle which will be both air-transportable and capable of piggy-back transport on a mother submarine. In a typical mission sequence, the following procedure may be used:

1. Disabled submarine releases a distress alert.

2. Upon receipt of distress signal, the nearest rescue unit is alerted.

3. The rescue vehicle is transported to airfield on a special trailer truck.

4. The vehicle and special pallet is loaded in a C–141A aircraft and flown to an airport nearest the port of disaster.

5. The vehicle is trucked to the nearest port for off-loading onto either a surface craft or mother submarine.

6. The support ship (surface or submarine) will proceed to the disaster area and launch the rescue vehicle.

7. The rescue vehicle will proceed to the sunken submarine and mate to the escape hatch.

8. Personnel will be transferred to the rescue vehic and transported to the mother ship. Repeat trips will made as required to complete the rescue operation.

A preliminary design has been completed on the resc vehicle, resulting in the following characteristics:

- Length: 42 feet.
- Diameter: 8 feet.
- Weight: 50,000 pounds.
- Depth: 3,500 feet.
- Speed: 5 knots maximum, 3 knots for 12 hours.
- Personnel: 3 crew, 12 rescuees.

Figure 1 shows an artist's concept of the rescue vehicl Figures 2 and 3 show a preliminary arrangement major hardware and external sensors, such as sonar, light television, etc.

There were two major considerations which dictat the concept and configuration finally selected: the mat rial, size and shape of the manned pressure capsu and the type of propulsion system.

A number of pressure hull configurations were close studied, including a single sphere, double interconnect spheres, a cylinder and, finally, the triple sphere conce adopted. An intensive study was also made of alternati materials such as high-strength steels, titanium and al minium. Of prime consideration in making a choice pressure capsule were the following factors:

- Structural strength.
- Internal space available.
- Internal and external arrangements.
- Weight/displacement ratio.
- Material fabricability.
- Flexibility for secondary missions.
- Air transportability.

The three-sphere concept chosen for the rescue vehicl provides an excellent mating bell location, requires no dis assembly prior to air transport, permits a very desirabl internal arrangement, provides compartmentation for o erator safety during the rescue mission and furthe allows more flexibility for secondary missions, i.e., Ma in-the-Sea support, oceanographic explorations, etc.

Although titanium would provide a better weight-di placement ratio, HY-140 was selected for the pressu hull because it offers a higher confidence level in abili to fabricate the vehicle within our time schedule.

The selection of a propulsion and control system is pe haps the most critical factor in achieving the highl maneuverable vehicle required for the rescue mission. Th underwater mating of the rescue vehicle with the sunke submarine is a difficult problem, to say the least. It r quires precise control at zero speed in the presence of cu rents and other flow irregularities, plus the ability to e tablish a leak-proof seal between the two vehicles. I effect, we are attempting to develop an underwat helicopter capability of hovering over our points of i terest.

An intensive study of alternative propulsion system was made on:

(*Continued on page* 1

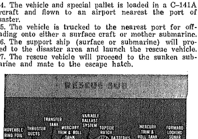


Figure 2.

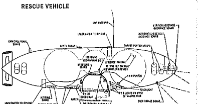
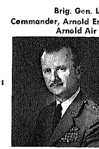


Figure 3.

The Requirement For Aerospace Propulsion Test Facilities

by

Brig. Gen. Lee V. Gossick, USAF
Commander, Arnold Engineering Development Center
Arnold Air Force Station, Tenn.



Brig. Gen. Lee V. Gossick, USAF

Man's progress in flight has been governed essentially by the performance, efficiency and reliability of the propulsion systems he has developed for his aircraft, missiles, satellites and spacecraft.

This does not imply that the aerodynamic, materials, structures, chemistry and electronic scientific disciplines are not important; but, rather that propulsion requirements are frequently the pacing technology.

Aerospace Progress Depends on Propulsion

Wilbur and Orville Wright solved their basic aerodynamic problems in wind tunnels and with gliders, but their first powered flight had to wait until they developed a lightweight engine that could sustain flight of the catapult-launched Wright Flyer.

Today, there are many critically important technical disciplines which confront us. They include development and reliable launch and recovery systems for spacecraft and satellites, improved re-entry vehicles, low-altitude supersonic and hypersonic vehicles and practical and dependable VTOL and STOL aircraft, to name only a few.

However, our success or failure in developing these types of aerospace craft will depend largely upon the availability of the advanced propulsion systems they require.

Because of the great emphasis on development of ballistic missiles, satellites and spacecraft during the past decade, the manpower and money allotted to the challenge that still confronts us in achieving improved flight within the earth's atmosphere has been assigned a lower priority.

The late Dr. Theodore von Karman expressed his concern with this oversight several years ago. He pointed out that we still have a long way to go in attaining optimum use of the earth's atmosphere to develop much more efficient air-breathing propulsion systems.

General Bernard Schriever, Commander of the Air Force Systems Command, emphasized the need for emphasis on propulsion development in the June 1965 issue of the *Defense Industry Bulletin* ("The U.S. Air Force Interest in Advanced Propulsion"). He said that propulsion is "a pacing area of technology, in the development of new aeronautical and space vehicles, as well as the true aerospace vehicles which are versatile enough to operate efficiently both within and outside the earth's atmosphere."

Propulsion Progress Depends on Facilities

There is an important corollary to General Schriever's statement. If propulsion is a pacing factor in aerospace progress, adequate propulsion ground test facilities are, in turn, the pacing factor for propulsion progress.

This, I believe, is an important fact which is frequently overlooked.

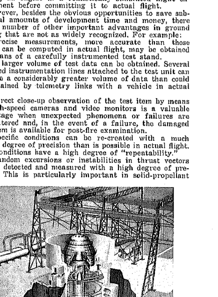
The air-breathing turbojets and ramjets, the solid and liquid propellant rockets and the electric propulsion devices of the future must be developed primarily in large supersonic propulsion wind tunnels, high altitude engine test cells or space simulation chambers capable of simulating the wide range of flight environments they will encounter in flight.

Ground Testing Advantages

During the past five years, there has been a significant increase in ground testing propulsion systems. This has been directed by the requirement to stay abreast of the development of new aerospace vehicles. This trend also illustrates the growing recognition of the advantages in testing an engine in a realistically simulated flight environment before committing it to actual flight.

However, besides the obvious opportunities to save substantial amounts of development time and money, there are a number of other important advantages in ground testing that are not as widely recognized. For example:

- Precise measurements, more accurate than those which can be computed in actual flight, may be obtained by means of a carefully instrumented test stand.
- A larger volume of test data can be obtained. Several hundred instrumentation lines attached to the test unit can provide a considerably greater volume of data than could be obtained by telemetry links with a vehicle in actual flight.
- Direct close-up observation of the test item by means of high-speed cameras and video monitors is a valuable advantage when unexpected phenomena or failures are encountered and, in the event of a failure, the damaged test item is available for post-fire examination.
- Specific conditions can be re-created with a much higher degree of precision than is possible in actual flight. Test conditions have a high degree of "repeatability."
- Random excursions or instabilities in thrust vectors can be detected and measured with a high degree of precision. This is particularly important in solid-propellant



World's largest altitude test cell for test firing rocket engines up to 500,000 pounds of thrust. This Propulsion Engine Test Cell (J-4) is part of the Rocket Test Facility at the Air Force's Arnold Center. The exhaust gasses are captured by an underground chamber 250 feet deep and 100 feet in diameter.

rocket motors. In some cases, it is also important to measure deviations in the thrust vectors while the motor is spun on the thrust stand.

Typical Test Problem

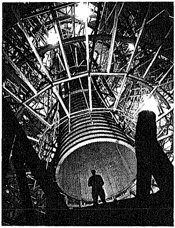
These generalized advantages cover relatively broad areas of investigation within which there is a myriad of problems which may be considered as typical of propulsion tests in flight simulation laboratories. To mention a few examples: "chuffing" or residual thrust after the prescribed burnout of a solid-propellant rocket motor; destructive base heating resulting from the recirculation of exhaust gases in the clustered nozzles; failure or an uncooled nozzle extension in a simulated high-altitude environment; ignition failure in an ultra-high altitude environment; prohibitive inlet distortion in a turbojet or ramjet at certain attitudes at various altitudes and velocities; combustion or structural instabilities in various modes of operation; failure to achieve a re-start in a turbojet at certain velocities and altitudes; unexpected arcing in an ion-engine package when subjected to rapid, transient low pressure conditions simulating decompression when ejected from a protective shroud.

Propulsion Test Objectives

Simply stated, the testing of propulsion systems in ground test facilities is basically concerned with determining the effects of altitude, velocity and temperature on the engines and their components. More specifically, the major points of testing in propulsion ground test facilities are:

Turbojets and Ramjets. Determining inlet-engine compatibility; documenting design performance in preliminary flight rating tests; determining combustion and thermol characteristics, nozzle exit conditions and structural adequacy at critical flight conditions; investigating the adequacy of automatic or manual control systems.

Rocket Motors. Determining performance—measuring thrust and impulse; documenting nozzle reliability, efficiency and durability; investigating thermal characteristics; determining ignition, mixing and combustion characteristics; and investigating certain dynamic effects as spinning, staging, acceleration and vibration.



Underground exhaust chamber. Almost 200 feet below ground level, a test crewman looks up at the diffuser, which captures exhaust of rocket engines having up to 500,000 pounds of thrust, being tested in the largest of ten high altitude test cells at the Air Force's Arnold Center.

Electric Propulsion Devices. Determining general performance and adequacy of controls, investigating the effect of high-vacuum environments and of thermal loads imposed by solar radiation and the heat sink of space; determining the interactions of adjacent systems and components.

Major Advances Required

During the past 20 years, propulsion technology has advanced at an extremely rapid rate. It has been a quick, long step from the reciprocating engines of World War II, to the turbojets and ramjets, the rocket engines and practical electric space propulsion.

During the next decade, advances in aerospace programs will depend upon major advances in propulsion technology—and in the scientific disciplines embraced by the technology such as materials, fuels, structures and electronics. The goal of developing such major systems as the supersonic transport, hypersonic manned aircraft, recoverable space boosters and a variety of advanced space and satellite systems can be translated into real requirements for such propulsion systems as the high-pass turbojet, the supersonic burning or combustion ramjet commonly identified as "Scramjet," perhaps a practical dual-cycle engine which can make the transition from turbojet to ramjet and an array of reliable, highly efficient electrical propulsion devices and chemical rocket motors.

Development of these advanced propulsion systems—the ones that will be required in the 1970-1980 period—is going to require a new generation of ground test facilities. These facilities require a long time to plan, design, fund and build, due to the complex technologies involved. Without advances in ground test facilities, progress in the field of aerospace propulsion will be jeopardized.

To insure the most rapid and economical development of future aerospace systems, we must take immediate steps to insure that adequate ground test facilities for propulsion systems are planned, designed, funded and built without delay.

Army Will Activate New Division and Three Separate Brigades

The U.S. Army will activate an infantry division of about 14,000 men and three brigades consisting of about 3,800 men each by early 1966.

Plans call for one brigade to be organized at Fort Devens, Mass., in October 1965, another at Fort Campbell, Ky., in January 1966 and the third at Fort Benning, Ga., in February 1966. Each brigade will consist of three infantry battalions, one artillery battalion and other support, command and control units.

The new division will be activated in December of this year at a location to be announced later. Designations of all the new units will also be announced later.

Each of the new units will be built around a nucleus of experienced officers and non-commissioned officers drawn from other elements of the active Army. The balance of the unit's strength will be made up of newly enlisted or inducted men.

Personnel of the division, and the brigade to be activated in October, will be given basic combat training and advanced individual training in the units rather than at Army training centers. Men to be assigned to the remaining brigades will be put through the training centers and will have completed basic and advanced individual training by the time they report to their brigades. This system will provide for the simultaneous training of the greatest possible number of men during the time the Army is expanding the capacity of its training centers.

Defense Contract Audit Agency Assumes Control Of Contract Audit Operations

Effective July 1, 1965, the Defense Contract Audit Agency (DCAA) assumed technical control over all Department of Defense contract audit operations. Planning for the take-over was initiated in January of this year following Secretary McNamara's decision in December 1964 to consolidate the contract audit organizations of the three Military Departments and establish the new agency.

The DCAA's assigned mission is the performance of all necessary contract auditing for the Department of Defense and the Military Departments and, in so doing, to provide accounting and financial advisory services as required in connection with the negotiation, administration and settlement of contracts and subcontracts. DCAA will also provide contract audit service to other Government agencies where arrangements for such service are made.

Contractors are, of course, interested in knowing what impact the new agency will have on them. Mr. William B. Petty, director of the agency, has advised that it is his intention and objective to make this impact as light as possible and that every effort will be made to operate in a manner which will be constructive and beneficial.

Substantial benefits are calculated to accrue both to the Government and to its contractors by reason of the consolidation. What are the benefits that may accrue to contractors? Following are some examples which come to mind.

Promptness of Audit Service. The total DCAA audit personnel complement is understandably much larger than the contract audit staff of any one of its predecessor organizations. This condition will permit better deployment of the total audit staff in the interest of more timely audit service. Consolidation of contract audit has also eliminated the need for numerous interagency requests for assist audits which operated to lengthen the time frame for completing many audits.

Continuity of Audit Cognizance. With the activation of the DCAA, there is no longer any need for tri-service audit coordination at a contractor location. Audit coordination was a technique used by the departmental audit services to avoid multi-service audit at the same contractor location. The audit service of the department with total dollar preponderance of auditable contracts would be assigned the responsibility for all required audit work regardless of whether it was for the Army, Navy, Air Force, or other Government office. The system had much to recommend it. However, it resulted in some problems to contractors when audit cognizance changed from one audit service to another.

Uniformity of Audit Approach. Operating as separate, autonomous entities, the departmental contract audit services could not avoid developing shades of difference in audit approach. Cumulatively, the differences became most marked upon change of audit cognizance at a contractors location from one of the departmental audit agencies to another. On such an occasion it became necessary for contractor personnel to adjust to the requirements of the incoming audit service while "unlearning" the requirements of its predecessor. Areas where differences among the audit services were apt to exist included details of audit procedures, format and content of audit reports and, in some cases, audit views as to acceptability of specific cost items. This will no longer exist under DCAA. Uniform audit and reporting procedures will apply across the board to all DCAA audits. The best features of predecessor Army, Navy and Air Force instructions and procedures will be utilized.

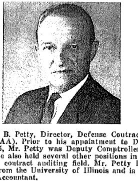
Effectiveness of Communication. Activation of DCAA as the sole contract audit organization within the Department of Defense has created a climate which is conducive to most effective communication at management levels between the contract audit function and contractors, individually or collectively, on matters of contract audit significance. In a spirit of mutual understanding and respect for each other's responsibilities and objectives, the atmosphere can be exploited to the benefit of both Government and the contractor. Routine matters, as well as most other audit matters of concern to the contractors, can and will be resolved at the field auditor level. However, contractors are assured that audit management at every level in DCAA is available for discussion and resolution of problems and for consideration of suggestions for improving DCAA/contractors relations.

Cooperation with Contractors. DCAA is keenly aware that industry is a major partner in the country's continuing effort to obtain the high quality military hardware and the research and development necessary to advance our defense posture. The Secretary of Defense has called for increased cooperation between the Government and its contractors to achieve this goal. Through training and experience, DCAA auditors have learned to recognize that the legitimate motivation of contractors to maximize their profits on defense contracts is not in conflict with audit's responsibility to review contract cost representations and make appropriate recommendations and suggestions to contracting officers. DCAA's organizational alignment within the Department of Defense fosters the professionally independent status of the auditors in the performance of their examinations and the formulation of their conclusions. DCAA management will continue to remind its auditors that the exercise of this independence imposes a responsibility on each of them for self-appraisal to assure that their position is at all times objective and sound. Major emphasis will also continue to be placed on professional competence, high integrity and fairmindedness as basic requisites in the reviews and evaluation of contractors' cost representations.

The advantages from the Government's side include reduced cost of audit through more efficient staff utilization, elimination of duplication in regional office administration, ability to provide better training in audit techniques and audit management, greater uniformity in cost interpretations and strengthening of the procurement liaison program.

While day to day operations are under the control of the director of the agency, a Defense Contract Audit Advisory Council has been established to monitor its performance. The council members consist of: the Deputy Secretary of Defense, Chairman; the Assistant Secretary of Defense (Comptroller), Alternate Chairman; the Assistant Secretary of Defense (Installations and Logistics); the Assistant Secretaries of the Military Depart-

(*Continued on page 24*)



Mr. William B. Petty, Director, Defense Contract Audit Agency (DCAA). Prior to his appointment to DCAA in January 1965, Mr. Petty was Deputy Comptroller of the Air Force. He also held several other positions in the Air Force in the contract auditing field. Mr. Petty holds an AB degree from the University of Illinois and is a Certified Public Accountant.

Reliability
Keystone Of The Space Age

by

Maj. Gen. G. F. Keeling, USAF

Dep. Chief of Staff, Procurement & Production
Headquarters, Air Force System Command

Maj. Gen. G. F. Keeling, USAF

Reliability is the keystone of the space age. To meet the challenge of space, we must direct a concerted effort to the design of vehicles that enjoy reliability for beyond that required in an earthbound environment.

During the development of the Minuteman ballistic missile, the Ballistic Systems Division of the Air Force Systems Command, in conjunction with North American Aviation, Inc., established a series of specifications designed to guarantee the highest attainable degree of reliability in electronic parts being programmed into the Minuteman weapon system.

These specifications (MIL–38100 Series) defined in detail the quantitative reliability requirements of specific parts and established the test and demonstration procedures to verify that the spec reliability had actually been achieved.

To ensure the continued production of parts of established reliability, the Air Force has issued MIL–STD–839, which directs the use of parts of established reliability of future Air Force programs. The qualified parts list of this MIL–STD will be expanded as rapidly as new qualifiers are verified.

The Space Parts Working Group, composed of representatives from industry, the Military Services and NASA, studied in depth the requirements for units to be utilized in space. They found that the most reliable parts developed under the Minuteman program were only marginal for space probes as well as for manned and unmanned orbital vehicles.

Using the base lines developed for the Minuteman specifications as a departure point, the Working Group expanded these parts specifications to satisfy the most urgent current space reliability requirements.

Quantitative reliability requirements are now mandatory in all new Air Force contracts, and we will continue to use these quantitative requirements to an even greater extent. Applying quantitative requirements for reliability to our contracts has given us problems which must be solved.

One of these is the frequent difficulty of measuring the quantitative characteristics in systems, subsystems and components. This problem has opened wide the field of reliability demonstration. Specialists are required in statistics of reliability and in engineering analysis. Techniques of testing will have to be devised. New environmental chambers and controls will have to be constructed to simulate either expected real-life environments or more severe environments for accelerated testing. Research must be performed to successfully exploit the time and money-saving techniques of accelerated testing, as well as the physics of aging and failure.

A second problem pertaining to quantitative reliability requirements is the definition of failure itself. This is necessary to determine compliance with contractually stated quantitative reliability requirements. Today there are still gray areas which have to be made either black or white. In a recent reliability demonstration program, the test equipment was very complex—more complex than the system under test itself. When the test got under way, we started getting failures; some were valid failures of the system, but most were test equipment failures. As a result, the isolation of true failures became our most important problem.

Third, we must consider the analysis of where and when to apply high reliability effort. High reliability carries a price tag—if not in dollars, then in time, in weight or in space. The high cost of reliability forces us to be selective. We cannot afford to spread the sweet icing of reliability over the entire cake. Since we must reserve it for the most critical components and systems, there is an increasing need for analysis of the trade-offs of reliability, dollar cost, time, weight and space.

Fourth, we must improve communication between the many Government agencies and the industry design groups, since basic design almost always predetermines reliability. We must devise a more uniformly acceptable symbology, and we need a system that will provide rapid knowledge of the classification, availability and design criteria for old items available on the market as well as the newer technologies such as integrated circuits.

This brief review of the problem areas should not obscure the progress that has been made in achieving quantitative reliability in many Air Force programs. Now Air Force and industry must renew their efforts to solve jointly the problems that remain. The challenge is here; the initiative is up to us.

Design Study Contractors Named for V/STOL Fighter

The U.S. Air Force has named four contractors to take part in a design study effort on an advanced vertical short take-off and landing (V/STOL) tactical fighter program.

The contracts, which will be funded at approximately $1 million each, were awarded to Lockheed Aircraft Corp., Burbank, Calif.; McDonnell Aircraft Corp., St. Louis, Mo.; Republic Aviation Corp., Farmingdale, N. Y.; and The Boeing Co., Seattle, Wash.

Purpose of the six-month studies is to obtain information on various V/STOL fighter designs. The studies will cover various aircraft configurations for tactical missions, including close support of ground troops.

The Federal Republic of Germany is funding parallel studies with two German firms.

These design studies will permit the evaluation of various industry concepts for a V/STOL tactical fighter.

Civil Defense Course Sponsored by OCD

The Office of Civil Defense (OCD), Department of Defense, is sponsoring three courses in nuclear defense planning to be held at colleges and universities throughout the nation during the 1965-66 academic year.

Professional architects and engineers interested in civil defense are invited to enroll in the courses free of charge. The study programs, taught by college professors under contract by OCD, are titled Fallout Shelter Analysis, Protective Construction and Environmental Engineering.

Specific information on locations, course content and enrollment procedures can be obtained by contacting the nearest state or local civil defense office or regional office of OCD. Regional offices are located at Harvard, Mass.; Olney, Md.; Thomasville, Ga.; Denton, Tex.; Battle Creek, Mich.; Denver, Colo.; Santa Rosa, Calif. and Everett, Wash.

DEPARTMENT OF DEFENSE

Dr. Timothy W. Stanley, formerly on the Policy Planning Staff, Office of the Asst. Secretary of Defense (International Security Affairs), has been appointed Assistant to the Secretary of Defense for NATO Force Planning, a newly created position.

Maj. Gen. Charles J. Timmes, USA, is the new Dir., Remote Area Conflict (Project AGILE), Advanced Research Projects Agency. He replaced Maj. Gen. R. H. Wienecke, USA (Ret.).

Maj. Gen. Ray J. Laux, USA, former Commander, Defense Subsistence Supply Center, has become Commander, Defense General Supply Center, Richmond, Va. He succeeds RAdm. James S. Dietz, USN, who has assumed command of the Navy Supply Center, Norfolk, Va.

Maj. Gen. James C. Sherrill, USAF, has been designated Dep. Dir. for Transportation, J-4, The Joint Staff, Office of the Joint Chiefs of Staff.

Brig. Gen. David I. Liebman, USAF, has been assigned as Military Assistant to the Asst. Secretary of Defense (Public Affairs). He replaces Capt. Hugh Robinson, USN, who has been reassigned to the Office of Chief of Naval Operations. Capt. Lloyd V. Young, USN, has been assigned as Special Assistant to the Dep. Asst. Secretary of Defense (Public Affairs).

Lt. Col. Hugh B. Mitchell, USAF, MC, has been appointed Dep. Dir., Armed Forces Radiobiology Research Institute, replacing Col. Carl L. Hansen, Jr., who has retired.

Maj. Gilbert M. Billings, USAF, has been assigned to the Business & Labor Div., Office of Asst. Secretary of Defense (Public Affairs).

ARMY

Brig. Gen. M. J. Reichel has been designated Director of Transportation.

Brig. Gen. Roger M. Lilly is the Commanding General of the Automatic Data Field Systems Command, Fort Belvoir, Va., a new organization.

Brig. Gen. Howard P. Persons, former Dep. Commanding General for Air Defense Systems, U. S. Army Missile Command, has been reassigned as Asst. Chief of Staff for Operations, Training, Plans & Combat Development, U. S. Army Air Defense Command, Ent. AFB, Colo. Col. C. C. Harvey, Jr., has been nominated for promotion to brigadier general and has succeeded Gen. Persons as Dep. Commanding General for Air Defense Systems, U.S. Army Missile Command.

Dr. Lawrence E. Kellion, Scientific Advisor of the Test Directorate, U.S. Army Electronic Proving Ground, Fort Huachuca, Ariz., has been detailed as Chief Scientist of that installation.

Col. James A. Thetford has assumed duties as Chief, Technical Liaison Office, Office of the Chief of Engineers.

ABOUT PEOPLE

Lt. Col. Bernard G. Elfert is now the Commanding Officer of the U.S. Army Chemical Research & Development Laboratories, Edgewood Arsenal, Md.

NAVY

RAdm. Alexander C. Husband has been appointed Chief, Bureau of Yards and Docks replacing RAdm. P. Corradi.

RAdm. B. W. Sarver has become Project Manager of PM-3 Surface Missile Systems. He replaces RAdm. E. T. Reich.

Maj. Gen. William R. Collins, USMC, has been assigned as Asst. Chief of Staff, G-3, Hq., U.S. Marine Corps.

Brig. Gen. Edward H. Hurst, USMC is the new Dir., Marine Corps Landing Force Development Center, Marine Corps Schools, Quantico, Va.

Col. Frank E. Garretson, USMC, selected for promotion to brigadier general, has become Marine Corps Liaison Office to the Chief of Naval Operations.

Capt. William O. Powell, Jr., is the new Commanding Officer of the U.S. Naval Avionics Facility, Indianapolis, Ind.

Col. Robert E. Baldwin, USMC, has replaced Col. Walter J. Ridlon, USMC, as Supply Officer, Marine Corps Schools, Quantico, Va.

AIR FORCE

Brig. Gen. Douglas E. Williams is the new Vice Commander of the Air Force Communications Service.

Recent assignments in the Air Force Systems Command (AFSC): Brig. Gen. Robert C. Richardson, III, as Dep. Chief of Staff, Research & Technology, Hq, AFSC; Col. Elwood M. Douthett, Dir., Rocket Propulsion Laboratory, Edwards AFB, Calif.; Col. Roy C. Heflebower, Jr., Chief, Concepts Planning Div., Directorate of Policy & Concepts Planning, Hq., AFSC; Col. Walter C. Vitmoc, Dir., Foreign Technical Data Management, Hq., AFSC; and Col. Walter B. Milburn, Jr., Chief, Management Contract Office, Electronic Systems Div., L. G. Hanscom Field, Mass.

Col. Seymour Stearns has been assigned as Dir. of Requirements, DCS/Plans & Programs, Hq., Air Force Communications Service.

The following are nominations for general officer promotions announced by the Air Force.

To be major general: Brig. Gen. W. E. Creer, Commander, 823rd Air Div., SAC; Brig. Gen. Loren G. McCollom, Dep. Commander, 17th Air Force; Brig. Gen. Thomas B. Whitehouse, Chief of Staff, USMACTHAILAND; Brig. Gen. Joseph L. Dickman, Dir. of Operations, J-3, NORAD and CONAD; Brig. Gen. Thomas R. Ford, Dep. Chief of Staff, Materiel, Air Defense Command; Brig. Gen. W. W. Wisman, Dep. Dir. for Operations, J-3, JCS; Brig. Gen. Joseph J. Cody, Jr., DCS/Systems, AFSC; Brig. Gen. Richard S. Abbey, Dep. Chief of Staff, USMACV; Brig. Gen. W. D. Greenfield, DCS/Operations, Air Defense Command; Brig. Gen. Howard A. Davis, Dir. of Studies & Analysis, Hq., USAF; Brig. Gen. T. F. O'Keefe, Asst. for Logistics Plans, Hq., USAF; Brig. Gen. L. S. Lightner, Dep. Dir., Legislative Liaison, Hq., USAF; and Brig. Gen. Richard H. Ellis, Dep. Dir., Plans & Policy, J-5, JCS.

To be brigadier general: Col. Roger E. Phelan, Dep. Dir. of Plans for Policy, Hq., USAF; Col. D. E. Riley, Dep. for Systems Management, Electronic Systems Div., AFSC; Col. John E. Frizen, DCS/Operations, Air Force Communications Service; Col. Leo A. Kiley, Commander, AF Cambridge Research Laboratories; Col. C. H. Bolender, Dir., Apollo Mission, NASA; Col. Leo P. Geary, Program Dir., SR-71/YF-12A, Hq., USAF; Col. H. B. Kucheman, Jr., Dep. for Unmanned Systems, Space Systems Div., AFSC; Col. James F. Kirkendall, Executive to Chief of Staff, Hq., USAF; Col. Frederick E. Morris, Jr., Comptroller, Hq., AFLC; Col. W. V. McBride, Military Asst., Office of Secretary of the Air Force; Col. J. S. Chandler, Jr., Asst. Dep. Commander for Space (MOL), AFSC.

DDC Documents Now Available in Microfiche

Scientific and technical documents in a new miniature form are available for all current accessions of the Defense Documentation Center (DDC), at Cameron Station, Alexandria, Va. Documents are now processed on the 4x6-inch sheet film, known as microfiche, and are available to all DOD components, their contractors and grantees who are authorized DDC services.

Microfiche can be stored and retrieved with all the convenience of file cards and mailed in ordinary envelopes. They will average two microfiche to a document.

DDC users can read or reproduce full-sized copies of reports from microfiche using equipment now on the market.

The "SAWS" Corporation Ideas-Plans-Programs

Located on a military reservation not too many miles from Augusta, Ga., is a unique "industrial corporation"—called the "SAWS"[1] Corporation—that is rapidly becoming famous. This facility is known not for the merchandise or services it manufactures, but for the production of some of the most vital commodities used in the industrial defense and disaster planning programs of certain selected industrial facilities: IDEAS—PLANS—PROGRAMS.

The Saws Corporation in its hypothetical role produces electron tubes and, as such, is included on the Department of Defense Key Facilities List. For training purposes it comes under the purview of the Department of Defense Industrial Defense Program.

Early in World War II, manpower used to protect industrial plants engaged in war production ran into hundreds of thousands. Realizing that we could not afford the luxury of such manpower utilization in the future, need was recognized for more selectivity in designating facilities as vital to the defense of our country. The Key Facilities List was originated to meet this requirement and in 1952 the corresponding Department of Defense Industrial Defense Program was established. This program is designed to assure the uninterrupted production capability of these vital facilities through the use of non-military measures.

The Saws Corporation, a miniature model of an imaginary industrial facility, is the focal point for the development of many emergency planning principles taught in the Industrial Defense and Disaster Planning for Privately-Owned and Privately-Operated Facilities Course (POPO) at the U.S. Army Military Police School, Fort Gordon, Ga.

Although "located" on a military installation, the Saws Corporation is concerned with non-military or passive defense measures. Industry is not expected to defend itself against an armed enemy; this is a military operation. Management, however, is expected to take measures calculated to prevent sabotage and espionage, to minimize the damage resulting from an enemy attack or a natural disaster and to provide for rapid restoration of production if attack or disaster occurs.

Three or four times each year, key executives from private industry and Governmental agencies seize the management reins of the Saws Corporation. Brought together in a working situation, this select group develops additional insight into the Department of Defense Industrial Defense Program and the application of those non-military measures which will assist in providing for the protection of the productive capability of their facilities.

Having recognized the requirement for plant disposal, protection of personnel, continuity of management, records protection, mutual aid programs and other emergency plans, the new management staff goes to work. Raw concepts, basic principles and individual ideas (perhaps the most important ingredient) are presented for Saws Corporation staff consideration. The finished product evolves as a defense and disaster plan which can be adopted, to at least some extent, into the plans of almost every individual facility or installation.

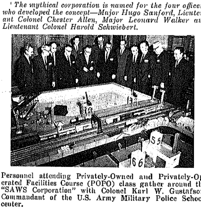
While management of the Saws Corporation changes with each class, the labor force remains relatively constant. The labor force of this plant is the teaching staff of the Industrial Defense and Disaster Planning Committee of the U.S. Army Military Police School. These highly competent faculty members are frequently augmented by guest speakers and instructors who are leaders in their particular field of industry. Graduates of the POPO course could be listed in a Who's Who or Blue Book of industry. Often one of them returns and, in his executive role, makes a presentation to the class in current session.

The five-day POPO course, tuition-free, has been offered to selected management representatives each year since 1958. It is open to executives of privately-owned and privately-operated facilities and of Governmental agencies whose duties include national emergency, mobilization or disaster planning. Priority is given to representatives of facilities appearing on the Department of Defense Key Facilities List. No security clearance is required.

The POPO course will be presented three times during Fiscal Year 1966:

Class #1—November 14-19, 1965
Class #2—February 6-11, 1966
Class #3—April 17-22, 1966

Representatives of facilities included in the Industrial Defense Program who desire to attend should request quotas from industrial defense representatives at the military headquarters that conducts surveys of their facilities. Applicants not associated with the Industrial Defense Program should apply directly to the Office of The Provost Marshal General, Department of the Army, Washington, D. C. 20315.



Personnel attending Privately-Owned and Privately-Operated Facilities Course (POPO) class gather around the "SAWS Corporation" with Colonel Karl W. Gustafson, Commandant of the U.S. Army Military Police School, center.

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[1] *The mythical corporation is named for the four officers who developed the concept—Major Hugo Sanford, Lieutenant Colonel Chester Allen, Major Leonard Walker and Lieutenant Colonel Harold Schwiebert.*

CORRECTION

Several of our readers have brought to our attention an error in the article, "Approved Map and Plan Security Cabinets Available to Contractors," which appeared on page 21 of the July issue of the Defense Industry Bulletin. *The description of the security cabinets was incorrectly listed. The entire article is therefore reprinted below containing the necessary corrections.*

Approved map and plan security cabinets are now on the Federal Supply Schedule and available to all authorized contractors who have requirements to store classified Defense information.

There are two types of cabinets available. The first is identified as a Class Five cabinet and affords protection for:

30 man-minutes against surreptitious entry.
20 man-hours against manipulation of the lock.
20 man-hours against radiological attack.
10 man-minutes against forced entry.

The other is identified as a Class Six cabinet and affords protection for:

30 man-minutes against surreptitious entry.
20 man-hours against manipulation of the lock.
20 man-hours against radiological attack.
There is no forced entry requirement.

Both of these cabinets have been tested and approved under tests defined in Interim Federal Specifications AA F-00363 (GSA-FSS) and represent an important advance in security protection for classified plans and bulk material.

Navy Long Range Planning Information Available to Scientific & Technical Groups

The Bureau of Naval Weapons (BUWEPS) has a program designed to provide the scientific and technical community with information on the Navy's requirements and objectives in the research and development of future weapons systems.

Called the Long Range Scientific and Technical Planning program, the system provides scientific groups with information about mission concepts, operational requirements and weapon system trends to enable these groups to better direct their effort in the development of Navy weapons systems.

Objectives of the program are:

- To keep scientific and technical groups well informed of the operational and technical problems confronting BUWEPS in planning and developing future weapons systems.
- To encourage industrial groups to provide cooperative assistance to BUWEPS in order that more effective long range research and development plans may be prepared.
- To promote the solution of specific technical problems of interest to BUWEPS.

To cover the broad scientific and technical aspects of this program, three types of projects are handled: Unfunded Study Projects, Plans Analysis Projects and Research and Engineering Problems.

- **Unfunded Study Projects** are established primarily to develop new concepts. These projects support future systems planning at all levels in the BUWEPS Research, Development, Test and Evaluation (RDT&E) Group. They involve extensive original work which may include research, design or development studies. Specific requirements for a study project are developed as required in cooperation with qualified engineers from the cognizant technical office in the RDT&E Group. Qualified scientific groups interested in starting a study project should contact the cognizant office to establish their capability and areas of interest.
- Under **Plans Analysis Projects**, qualified scientific groups review and evaluate selected parts of the Navy's long range research and development plans covering development of systems and components and supporting research. In return for access to BUWEPS planning documents, these groups may be required to provide the Navy with appropriate and analytical comments covering the adequacy and feasibility of the planning information furnished, proposed alternative approaches which may lead to improved performance or lower costs, or other relevant suggestions.

Plans analysis projects are divided into two areas: weapon system plans and technical area plans. Weapon system planning data supporting naval mission areas and operational requirements are released to qualified scientific and technical groups for review, evaluation and comment. A series of technical area planning documents (TAP's) that delineate the RDT&E Group's technical requirements and objectives for supporting research and component development are also released for review and evalution. Comments on selected planning documents are invited.

- The Bureau periodically defines problems for which it is seeking solutions and consolidates them into classified and unclassified **Research and Engineering Problems** documents. These documents are released to scientific groups that may be able to provide solutions to any of the problems. Proposals for research and development contracts to study or develop solutions to the problems presented are not actively sought and should first be discussed with cognizant technical personnel. Proposed approaches to solutions supported by test data should be submitted in writing to BUWEPS for evaluation and possible contract or additional study effort.

Scientific groups wishing to participate in the Long Range Scientific and Technical Planning Program must meet the following requirements:

- Have the necessary technical competence to engage in research and development work and a reasonable potential to execute a contract.
- Possess a current Department of Defense Industrial Facility Security Clearance equal to the level of classified material involved.
- Have executed the Department of the Navy Policy Agreement.
- Have established with the cognizant engineering office in the Bureau an approved study or plans analysis project, or requested copies of the research problems documents.

The RDT&E Plans Officer will invite scientific groups to participate in the BUWEPS program on the basis of recommendations from sub-group officers. Invitations will include a listing of the procedures to be followed in initiating projects. Policy Agreement Forms, Project Forms and instructions for their completion are forwarded with invitations to participate. These must be returned to the BUWEPS, fully executed, before a project can be established.

Organizations interested in participating in the Long Range Scientific and Technical Planning Program should write to Chief, Bureau of Naval Weapons, Attn: Code R–2, Washington, D.C. 20360. The requesting organization should outline its research capabilities, the specific technical areas in which participation is desired and provide information concerning present security status. Organizations that have signed a Policy Agreement and desire to establish a Plans Analysis Projects should contact the Plans Office by a personal visit or by letter.

Technical Area Plans of 83 projects currently of interest to the Navy are briefly described in a BUWEPS publication titled, "Synopsis of Technical Area Plans." The booklet may be obtained by writing to the Bureau of Naval Weapons, Code R–27, Washington, D.C. 20360.

Following are two examples of how the projects are described in the pamphlet and a complete listing of the projects appearing in the Synopsis:

AERIAL PHOTOGRAPHIC RECONNAISSANCE—Describes briefly five basic missions required of aerial reconnaissance: general reconnaissance, mapping, amphibious reconnaissance, night reconnaissance; and ASW reconnaissance. Current capabilities and limitation of existing equipments are discussed in detail, along with development projects now in existence. Future long range possibilities and requirements are also discussed. TAP No. FF–1. (CONFIDENTIAL)

TRAINING DEVICES—Describes current problems, capabilities and limitations associated with synthetic operational training. The present programmed effort which requires significant state of the art advancements in simulation, is pointed out and future trends are reviewed. TAP No. FW–1. (CONFIDENTIAL)

Projects described in BUWEPS R&D Long Range Plan Synopsis of Technical Area Plans are listed below:

	Meteorological Management Division
FA–1	Atmospheric Physics
FA–2	Meteorological Measuring Systems
FA–3	Meteorological Prediction
FA–4	Weather Modification and Control
	Photographic Management Division
FF–1	Aerial Photographic Reconnaissance (CONFIDENTIAL)
FF–2	High Altitude Photography (CONFIDENTIAL)
FF–3	Ground Processing and Printing Equipment (CONFIDENTIAL)
FF–4	Photographic Data Processing (CONFIDENTIAL)
FF–5	Underwater and Submarine Periscope Photography (CONFIDENTIAL)
FF–6	Photographic Interpretation and Intelligence Data Handling (CONFIDENTIAL)
	Maintenance Engineering Division
FW–1	Training Devices (CONFIDENTIAL)
	Aircraft Development Office
RA–1	Aerodynamics and Hydrodynamics
RA–2	Aircraft Structures
RA–3	Personnel Protective Equipment (CONFIDENTIAL)
RA–4	Aircraft Escape Systems (CONFIDENTIAL)
RA–5	Aircraft Mechanical Equipment (CONFIDENTIAL)
RA–6	Aircraft Electric Power Systems Design
RA–7	Aircraft Electric Distribution Systems and Components
RA–8	Aircraft Lighting
RA–9	Aircraft Reconnaissance Sensors (SECRET)
RA–10	Airborne AEW Surveillance and Control (CONFIDENTIAL)
RA–11	Airborne Weapons Equipment (CONFIDENTIAL)
RA–12	Airborne Communications and IFF (CONFIDENTIAL)

(*Continued on page 24*)

INDUSTRY BRIEFS

Columbus Division of North American Aviation, Inc., is now awarding gold PRIDE emblems to employees who consistently demonstrate high levels of performance or make a major contribution to the cost reduction, safety and other major programs . . . McDonnell Aircraft Corporation marked the delivery of the 1000th F-4 Phantom aircraft with ceremonies witnessed by DOD officials and over 5,000 plant personnel.

A Sikorsky Aircraft RH-3A helicopter built for the Navy tested its strength recently against a 1,600-ton destroyer escort. The helicopter pulled the vessel, started from a dead stop, at speeds up to 5.3 knots . . . Canada is the third country to acquire Northrop Corporation's F-5 aircraft by direct purchase for its defense inventory. Other two countries are Norway and Spain.

Aerojet General Corporation recently reported that its purchasing and subcontracting awards to small business throughout the United States in FY 1964 totalled $128,700,000, or 78% of all purchases made during the year . . . The "Think" campaign of Goodyear Aerospace Corporation is paying off. Employees in 1964 submitted a total of 1,255 suggestions as against 579 in 1963. There was a sizable increase in the number of ideas adopted in the cost reduction area . . . Lockheed Aircraft Corporation reports $50 million in subcontracts went to 6,390 small businesses.

The Cleveland Equipment Group of Thompson Ramo Wooldridge, Inc., received a Certificate from the Industrial College of the Armed Forces for its "significant contributions" to the College's education program . . . The Hughes Aircraft Company's trophy for the top Army ROTC graduate went to a University of Georgia graduate, Second Lieutenant Alexander W. Patterson . . . A booklet issued by the U.S. Industrial Payroll Savings Committee of the Treasury Department lists the 72 major companies with high participation by employees. At the top is Ling-Temco-Vought, Inc., with 92% participation.

The President's Committee on Employment of the Handicapped singled our Raytheon Company for having the most effective program in the nation in this area. It's "Employee of the Year" award was presented to Charles F. Adams, Raytheon Board Chairman, by Senator Edward M. Kennedy of Massachusetts . . . Citizens of Western New York were reminded of the contribution their National Guard Nike missilemen made to national defense by Cornell Aeronautical Laboratory, which featured these "full-time citizens and full-time soldiers" in the firm's magazine, "Perspective."

Sperry Rand Corporation believes in keeping its employees informed of the needs and activities of the military "users" of its equipment. A recent issue of "Sperryscope" featured by-line pieces by military officials of the Army, Navy and Marine Corps . . . The Air Force commended the Radio Engineering Laboratories' Engineering Department for its contribution to a technical report on communications published by that Service.

Gen. Schriever Heads Manned Orbiting Laboratory Program

The Secretary of the Air Force has designated General Bernard A. Schriever as Director of the Manned Orbiting Laboratory Program. This assignment is in addition to his duties as Commander, Air Force Systems Command.

As Director for MOL, General Schriever will report directly to the Secretary of the Air Force and will manage the program through a MOL Program Office in the Pentagon.

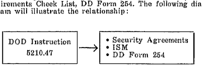
Brigadier General Harry L. Evans will be the Vice Director of the MOL Program. He has been serving as Special Assistant to the Secretary of the Air Force for MOL.

Brigadier General Russell A. Berg will be the Deputy Director of the MOL Program in charge of the MOL System Office located at the Space Systems Division headquarters in Los Angeles, Calif. He will have the additional duty of Deputy Commander of Space Systems Division for MOL.

DOD Security Instruction 5210.47 Clarified

In response to queries from defense industry, an explanation of that part of DOD Instruction 5210.47, "Security Classification of Official Information," which states that DOD components "shall accomplish its application to contractors" has been provided by the Office of the Assistant Secretary of Defense (Manpower).

DOD Instruction 5210.47 is the primary directive used in determining policy and guidelines on the security classification of official information insofar as the DOD and its contractors are concerned. Its linkage to defense industry is the Industrial Security Manual (ISM) for Safeguarding Classified Information (currently being revised to reflect the requirements of the Instruction), security agreements (DD Form 441 and security requirement clauses in procurement contracts), and the Security Requirements Check List, DD Form 254. The following diagram will illustrate the relationship:



DOD Instructions normally are distributed only within the department. However, 5210.47 may be read and/or duplicated by anyone.

A familiarity with the provisions of DOD Instruction 5210.47 should be helpful because its application will be designed to bring about, both within the DOD and the defense industry, a consistent and uniform approach to problems of security classification and management of classified information.

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SEPTEMBER 1965

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OCTOBER 1965

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NOVEMBER 1965

SPEAKERS CALENDAR

OFFICE OF THE SECRETARY OF DEFENSE

Hon. Harold Brown, Dir., Defense Research & Engineering, at dedication of Massachusetts Institute of Technology's Center for Material Science Engineering, Cambridge, Mass., Sept. 30.

VAdm. J. M. Lyle USN, Dir., Defense Supply Agency, at National Security Industrial Assn. Annual Dinner, Washington, D. C., Oct. 7. (Appearance only.)

Mr. Daniel J. Fink, Dep. Dir. of Defense Research & Engineering for Strategic & Defensive Systems, at 7th Annual North American Defense Command Electronic Warfare Conference, Ent AFB, Colo., Oct. 12.

Maj. Gen. W. S. Steele, USAF, Dep. Commandant, Industrial College of the Armed Forces (ICAF), **Dr. J. Poppe**, Professor of Economics, ICAF, and **Col. C. F. Austin, USA**, Plans, Policy & Curriculum Officer, ICAF, at West Coast Federal Personnel Management Conference, San Francisco, Calif., Oct. 28.

ARMY

Gen. Harold K. Johnson, Chief of Staff, at 11th Army Human Factor Research & Development Conference, Fort Bragg, N. C., Oct. 5; at National Security Industrial Assn. Luncheon, Washington, D. C., Oct. 7; at Assn. of the U. S. Army Convention Luncheon, Oct. 26.

Maj. Gen. A. W. Betts, Dep. Chief of Research & Development, at National Security Industrial Assn. Dinner, Oct. 7, (Appearance only.)

Lt. Gen. William F. Cassidy, Chief of Engineers, at Propeller Club of the U. S. Convention, Galveston, Tex., Oct. 13.

Lt. Gen. William W. Dick, Jr., Chief of Research & Development, at Fall Meeting of Army Scientific Advisory Panel, Detroit, Mich., Oct. 21-22.

Hon. Stanley R. Resor, Secretary of the Army, at Assn. of U. S. Army Annual Meeting, Washington, D. C., Oct. 25; at Army Aviation Assn. Annual Honors Luncheon, Washington, D. C., Oct. 29

NAVY

Hon. Paul H. Nitze, Secretary of the Navy, at 75th Anniversary of Naval Propellant Plant, Indian Head, Md., Sept. 25; at National Security Industrial Assn. Dinner, Oct. 7. (Appearance only.)

Mr. W. A. Doyle, Dir. of Management Div., Office of Naval Material, at 4th Bureau of Weapons Industrial Relations Officers Meeting, Chicago, Ill., Sept. 27.

RAdm. P. Corradi, Chief of Bureau of Yards & Docks, at American Society of Civil Engineers, Kansas City, Mo., Oct. 18.

Adm. David L. McDonald, Chief of Naval Operations, at Navy League Dinner, Richmond, Va., Oct. 19.

VAdm. I. J. Galantin, Chief of Naval Material, at Defense Weapons Systems Management Center, Wright-Patterson AFB, Ohio, Oct. 1; at Systems Effectiveness Conference, Sheraton-Park Hotel, Washington, D. C., Oct. 19.

AIR FORCE

Gen. H. M. Estes, Jr, Commander, Military Air Transport Service, at Allison Div., General Motors Corp., Indianapolis, Ind. Oct. 6.

Hon. Norman S. Paul, Under Secretary of the Air Force, at National Security Industry Assn. Dinner, Oct. 7. (Appearance only.)

Lt. Gen. W. A. Davis, Vice Commander, Air Force Systems Command, at Systems Effectiveness Conference, Sheraton-Park Hotel, Washington, D. C., Oct. 19.

Lt. Gen. T. P. Gerrity, Dep. Chief of Staff, Systems & Logistics, at Defense Supply Assn. Convention, Oct. 20. (Appearance only.)

Gen. B. A. Schriever, Commander, Air Force Systems Command, at Space Electronics Symposium, Miami, Fla., Nov. 3; at Heron Award Ceremony, Wright-Patterson AFB, Ohio, Nov. 17.

Gen. J. P. McConnell, Chief of Staff, at Calvin Bullock Forum, New York, N. Y., Nov. 16.

Navigation Roller Map Display System New Navy Concept

The U.S. Navy is developing a new concept in air navigation which provides pilots with a continuous presentation of their geographical position on an unperforated strip of standard aeronautical chart.

The Navigation Roller Map Display System, which is the first of its kind, will be installed in the Navy's A-7A light attack aircraft.

Operational use of the system furnishes continuous and automatic geographic information during the total mission profile. The map strip, loaded into compact cartridges, provides a moving map display that accommodates annotation on the chart prior to or during flight in permanent written form for in flight reference or post flight debriefing.

The roller map system, under contract to Applied Science Industries, Inc., of Falls Church, Va., has undergone extensive engineering redesign in an attempt to reduce complexity and cost with increased reliability, maintainability and accuracy.

Of seven firms competing to supply the system, Applied Science Industries was the only small business concern indicating an interest and capability in this specialized field.

Small Company Wins Big Contract With Good Product

Managers of small businesses who fear competing against the sometimes extensive technical and engineering services of large companies should be encouraged by the experience of Crate-Rite, Inc., of Oakland, Calif. Crate-Rite, with a total of 25 employees, manufactures shipping containers and carrying cases from such materials as wood, metal and fiberglass.

The company was recently successful in developing, testing and supplying fiberglass transit cases for a Navy contractor who had received a large order for electronic counters which had to be packaged to meet rigid specifications. Until then the counters had been supplied to the Government in aluminum-laminated-to-plywood transit cases. These, in turn, were overpacked in large cushion "floaters" and three corrugated containers.

Since a better, less expensive packaging system was needed, several companies were invited to bid. Crate-Rite, the smallest contestant, won the subcontract with a fiberglass case which met or exceeded the military specifications and saved over 22,000 pounds in freight weight for the order and approximately $10,000 in packaging costs.

NOTES FOR EDITORS

Briefed below are some events and projects within the Department of Defense which may be of interest to writers and editors. If further information on any of these topics is desired, please write to Chief, Magazine and Book Branch, Office of Assistant Secretary of Defense, Public Affairs, Washington, D. C. 20301

ARMY STRIVES FOR COMFORT AND SAFETY IN FLIGHT GEAR

The U.S. Army is conducting a research program at the Natick Laboratories in Massachusetts to develop safer and more comfortable equipment for aircraft pilots and crewmembers.

Included in the program is the perfection of an air conditioned flight helmet, more flexible and comfortable body armor and a cold weather boot that enables pilots to feel the foot controls of their aircraft.

NEW RESEARCH SUBMARINE DIVES 6,000 FEET IN FIRST OPERATION

ALVIN, the Navy's first deep-diving research submarine, successfully completed its initial dive to a depth of 6,000 feet July 20 off Andros Island in the Bahamas, 120 miles southeast of Miami. ALVIN stayed on the bottom for 20 minutes and all systems checked out satisfactorily. Further dives are set for later this year. As the first phase of a long-range deep research vehicle program, ALVIN is a tool which will enable oceanographers to make "on site" observations of deep water conditions.

With much greater range and maneuverability than the bathyscaph TRIESTE, ALVIN will be capable of more extensive research. For example, biologists will be able to observe directly the concentrations and behavior of marine life in deep water in the same manner as scuba divers in shallow water. Geologists will be able to inspect larger areas of the sea floor and obtain better samples of the bottom. Temperature, underwater currents, magnetic field, gravity field and various other properties of the ocean environment can be measured more accurately from a vehicle such as ALVIN.

NEW ULTRASONIC CORROSION DETECTOR EXPECTED TO PRODUCE AIR FORCE SAVINGS

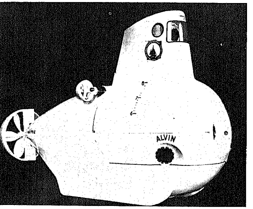
The Air Force has developed an ultrasonic corrosion detector which can inspect aircraft fuel tanks in a fraction of the time it now takes. The new device, mounted on a trailer, is guided under the wing of a parked aircraft and raised until it touches the underside of the metal wing. Ultrasonic sound waves are then bounced against the skin of the aircraft. The detector is reported to be more accurate than the human eye. In tests of C-130 aircraft faying surfaces (when metal joints overlap), only five per cent of the corrosion indicated by the equipment was spotted by visual inspection.

Present inspection methods, which call for draining the fuel, purging and entering the tanks and, in some cases, removing the sealant for visual inspection, are too costly and time-consuming. Scientists at the Air Force Materials Laboratory, Wright-Patterson AFB, Ohio, predict that savings, both in time and money, will be considerable once inspection units are available in greater numbers.

NAVY TO BUILD DEEP SUBMERGENCE COMPLEX AT ANNAPOLIS

Plans for the construction of a multi-million dollar deep submergence research complex have been announced by the U.S. Navy Marine Engineering Laboratory (MEL) of Annapolis, Md.

The pressure tank complex will simulate conditions in the deepest areas of the ocean and will be used to develop and test equipment designed for use at extreme depths. Three tanks in the complex will create ocean pressure conditions ranging from the surface to a depth of more than 56,000 feet, 50 per cent deeper than the deepest recorded depth. They will be built of high strength steel—up to 20 inches thick for the largest tank—and have a combined weight of 1,125 tons. Largest of the chambers will operate at a maximum pressure of 12,000 pounds per square inch, equal to pressure found about five miles down in the ocean. Navy planners, realizing that future submarines will go deeper and stay down longer, expect the MEL complex to help answer many questions concerning the capabilities of men and their equipment to function at extreme depths.



The Navy's new research submarine ALVIN dives to depths of 6,000 feet in tests in the Bahamas. The craft is manned by a two-man crew. It is 22 feet long and weighs 11 tons. ALVIN will be used primarily for oceanographic research. (SEE SECOND ITEM, NOTES TO EDITORS.)

The Air Force R&D Acquisition Process

by

Lt. Colonel N. Warren Graves, USAF

Chief, Research & Development Division
Office of DCS/Procurement & Production
Headquarters, Air Force Systems Command

The Air Force emphasizes the team approach in acquisition of research and development (R&D). The planner, scientist, manager, project engineer and contracting officer are all considered to be in the business of acquiring or, if you prefer, procuring R&D. Therefore, in this discussion the word procurement is used in its broad sense and interchangeably with the word acquiring. No attempt will be made to discuss procurement in the technical sense of purchasing or contracting. It is sufficient to say that technical procurement considerations enter into all steps of the acquisition process except the earliest planning steps.

In discussing how the Air Force acquires R&D, it is important that R&D be defined and responsibilities within the Air Force for its acquisition be specified. The Armed Services Procurement Regulation describes the five categories of R&D that we are concerned with here as:

"(1) Research—Includes all effort directed toward increased knowledge of natural phenomena and environment and efforts directed toward the solution of problems in the physical, behavioral and social sciences that have no clear direct military application. It would, thus, by definition, include all basic research and, in addition, that applied research directed toward the expansion of knowledge in various scientific areas. It does not include efforts directed to prove the feasibility of solutions of problems of immediate military importance or time-oriented investigations and developments.

"(2) **Exploratory Development**—Includes all effort directed toward the solution of specific military problems, short of major development projects. This type of effort may vary from fairly fundamental applied research to quite sophisticated bread-board hardware, study, programming and planning efforts. It would thus include studies, investigations and minor development effort. The dominant characteristic of this category of effort is that it be pointed toward specific military problem areas with a view toward developing and evaluating the feasibility and practicability of proposed solutions and determining their parameters.

"(3) **Advanced Development**—Includes all effort directed toward projects which have moved into the development of hardware for experimental or operational test. It is characterized by line item projects and program control is exercised on a project basis. A further descriptive characteristic lies in the design of such items being directed toward hardware for test or experimentation as opposed to items designed and engineered for eventual Service use.

THE R&D CYCLE

	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL SYSTEMS DEVELOPMENT
	← TECHNOLOGY →			← WEAPONS DEVELOPMENT →	
BASIC ORIENTATION	SCIENTIFIC	SCIENTIFIC	SCIENTIFIC	ENGINEERING (SYSTEMS ENGINEERING)	ENGINEERING (PRODUCTION ENGINEERING)
BASIC PURPOSE	TO EXPLORE THE UNKNOWN	TO ACQUIRE KNOWLEDGE OF SELECTED THEORETICAL APPROACHES VIA LABORATORY TEST	TO ACQUIRE KNOWLEDGE OF NATURAL PROCESSES THROUGH EXPERIMENTAL TEST	TO PERFORM SYSTEMS ENGINEERING PROGRAM DEFINITION PHASE, OPS CONCEPT & COST EFFECTIVENESS	TO PERFORM SYSTEMS ACQUISITION (OPERATIONAL)
END PRODUCT	KNOWLEDGE OF FUNDAMENTAL NATURAL PROCESSES	A REPORT A BENCH MODEL FOR FEASIBILITY CHECK AN EXPERIMENTAL COMPONENT	MAJOR HARDWARE ITEM FOR EXPERIMENTAL TEST	A COMPLETE SYSTEM WHOSE ENGINEERING DESIGN OPS, CONCEPT, AND COST EFFECTIVENESS HAS BEEN CONFIRMED	PRODUCTION ITEM FOR USE BY OPERATIONAL COMMAND
DIRECTION OF EFFORT	NOT DIRECTED TOWARD SOLUTION OF MILITARY PROBLEMS	DIRECTED TOWARD SOLUTION OF MILITARY PROBLEM — SHORT OF DEVELOPMENT HARDWARE FOR EXPERIMENTAL TESTING	DIRECTED TOWARD SOLUTION OF MILITARY PROBLEM—TO INCLUDE DEVELOPMENT OF HARDWARE FOR EXPERIMENTAL TEST	DIRECTED TOWARD THE ACQUISITION OF DATA NEEDED TO MAKE A JUDGMENT CONCERNING WHETHER OR NOT TO "GO OPERATIONAL" (DESIGN/COST/OPS DATA)	DIRECTED TOWARD ACQUISITION OF OPERATIONAL SYSTEM FOR AF INVENTORY
MANAGEMENT GROUPINGS	BY ACADEMIC DISCIPLINES . PHYSICAL SCIENCES . ENVIRONMENTAL SCIENCES . MATHEMATICAL SCIENCES . PSYCHOLOGICAL SCIENCES . BIOMEDICAL SCIENCES	BY SUBJECT SERIES . SPACE . ELECTROMAGNETIC . MATERIALS . FLIGHT CONTROL ETC	BY HARDWARE CATEGORIES 1 AERONAUTICS 2 SPACE 3 BALLISTIC MISSILES 4 ELECTRONICS	BY HARDWARE CATEGORIES 1 AERONAUTICS 2 SPACE 3 BALLISTIC MISSILES 4 ELECTRONICS 5 OPS SUPPORT	BY FORCE STRUCTURE 1 STRATEGIC FORCES 2 DEFENSIVE FORCES 3 GENERAL PURPOSE FORCES 4 AIRLIFT FORCES 5 GENERAL SUPPORT FORCES
REQUIREMENT	DO NOT REQUIRE SPECIFIC MILITARY PROBLEM	DO NOT REQUIRE SPECIFIC HARDWARE PAY-OFF	BEGIN TO QUESTION MILITARY UTILITY	SPECIFIC MILITARY MISSION OR USE DEFINED IN DETAIL, INTEGRATED WPN SYS, OR MAJOR COMPON OR SUB-SYS	SPECIFIC OPERATIONAL REQUIREMENT INCLUDING NUMBER OF SITES & HARDWARE UNITS
TECHNICAL RISK	HIGH	HIGH	HIGH	MODERATE	LOW
E. G.	PLASMA DYNAMICS CRYSTAL PHYSICS COSMIC RADIATION NETWORK THEORY MAN-MACHINE RELATIONS BIOMATHEMATICS	AUTOMATIC TERRAIN AVOIDANCE ADVANCED ICBM GUIDANCE LAMINAR FLOW CONTROL NEW PROPULSION CYCLES COMPUTER TECHNOLOGY RECONNAISSANCE TECHNIQUES	AERONAUTICS X-15 — V/STOL & VTOL ACFT LAMINAR FLOW AIRCRAFT MACH 9 RAM JET SPACE MOL — ASSET ION ENGINE BALLISTIC MISSILES STELLAR INERTIAL GUIDANCE ADVANCED ICBM TECHNOLOGY HIGH ENERGY SOLID PROPELLANTS ELECTRONICS REMOTE DETECTION COIN RADAR ADVANCED AIRBORNE WARNING	AERONAUTICS XB-70 CX-HLS SPACE TITAN III ATLAS-AGENA SPACE DEFENSE BALLISTIC MISSILES ADVANCED REENTRY ELECTRONICS INTELLIGENCE DATA HANDLING OPS SUPPORT AIRCRAFT FLARE	STRATEGIC FORCES ATLAS-TITAN-MINUTEMAN DEFENSIVE FORCES SPADATS GENERAL PURPOSE FORCES F-111A AIRLIFT FORCES C-141 GENERAL SUPPORT SUPPORT TO ALL WEAPON SYSTEMS
	← NOT APPROVED FOR THE OPERATIONAL INVENTORY →				← APPROVED →

FIG. 1

"(4) Engineering Development—Includes all effort directed toward those development programs being engineered for Service use but which have not yet been approved for procurement or operation. This area is characterized by major line item projects and program control will be exercised by review of individual projects.

"(5) Operational System Development—Includes all effort directed toward development, engineering and test of systems, support programs, vehicles and weapons that have been approved for production and Service deployment. This area is included for convenience in considering all RDT&E projects. All items in this area are major line item projects which appear as RDT&E Costs of Weapons Systems Elements in other programs. Program control will thus be exercised by review of the individual research and development effort in each Weapon System Element."

Within the Air Force the responsibility for acquiring R&D is assigned to two commands. The Office of Aerospace Research (OAR) is responsible for acquisition of research. The Air Force Systems Command (AFSC) is responsible for acquisition of exploratory development, advanced development, engineering development, and operational systems development. In addition AFSC is responsible for the acquisition of systems with which the Air Force operational force structure is to be equipped. Stated another way, the mission of AFSC is to advance aerospace technology, adapt that technology to aerospace systems and acquire qualitatively superior aerospace systems and material needed to accomplish the Air Force mission.

Figure I is a spread sheet on the R&D cycle showing the interrelationship of the categories, the progression from research through operational systems development and examples of each. In theory, systems progress through this cycle; in practice, a new system may originate at almost any point dependent on earlier research or development, priority, etc.

Now that terms and responsibilities are identified, the remainder of this discussion will be addressed to the development categories or the AFSC responsibilities for acquiring R&D. This is not to slight the importance of basic research, but that part of the R&D spectrum is not directed toward the solution of military problems as such and is, therefore, severable. Also, the development categories relate more directly to each other and constitute the major part of the R&D cycle.

The best vehicle to show the Air Force R&D acquisition process is a planning, progression chart showing the various approval/action levels, the key points in the process and their interrelationship. Such an idealized portrayal is shown in Figure II.

It should be kept in mind that each step is subject to deferral or acceleration as well as systematic progression. It should also be kept in mind that basic to Air Force R&D planning is the realization that there is no one "set-in-concrete" methodology or order of conducting the business of planning. When considering the wide diversity of R&D activity conducted by AFSC, we believe that planning must be flexible. This necessitates different planning approaches for different portions of the R&D spectrum. In this context Figure II shows the general path of R&D planning and the basic steps by activity or organization. It must be recognized that to look at this path as having a definite starting point at the research activity is seldom, if ever, correct. The path indicated can be entered at almost any point. It would not be entirely impossible, however, to follow a concept or idea generated from the research activity along the entire path indicated until it formed the whole or a part of the Development Directive.

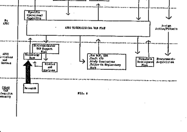

PLANNING FRAMEWORK FOR ACQUISITION OF R&D
Hq USAF
Capability Requirements
AF Planning Guidance
.Validate ADO
.Approve SOR OSR
Development Directive
Hq AFSC
Specific Operational Capability
AFSC TECHNOLOGICAL WAR PLAN
Assign Action/Projects
AFSC Divisions and Centers
Division-Center TWP Support Plan
Technology Base
Studies and Analyses
.Pre SOR, OSR
.Draft ADO
.Study Conclusions
.Follow On Exploratory Work
Formulate Development Plan
Procurement-Acquisition
Other OAR Scientific Community
Research

FIG. II

Starting with the research inputs, these plus the results of in-house study efforts give us the technology base which in turn is translated by AFSC into a usable form for the determination of our Specific Operational Capability (SOC) projection. This SOC is continually updated in terms of the Air Force long-range planning guidance.

The AFSC Technological War Plan (TWP) correlates all the planning ingredients, i.e., research, technology, resources, proposed threat, new ideas, policy and requirements into a single, dynamic, up-to-date expression of AFSC's future course. It is the tool which the AFSC Commander uses to ascertain the status of the command's planning from a total, overall corporate management viewpoint. He can determine which planning areas need more attention, and allocate additional resources to them by shifting relative priorities according to their respective degree of importance and urgency. The commander has approved the concept of the TWP as the primary source of guidance for plotting future courses of action, obtaining resources and providing near-, mid-, and long-range cohesiveness and continuity to Systems Command activities.

As can be seen, the AFSC TWP is a methodology of action as well as a document iterating fact. It encompasses the Headquarters, AFSC planning activity from the initial look at a new concept or new idea to the definition of a system. It treats technology, component and system in a like manner. Proposed activity for any of the above is reviewed to assure such activity is consistent with stated requirements, is compared to alternatives including state-of-the-art as well as other new technology, or supports the determination of new requirements.

The other terms used in Figure II requiring explanation are:

Advanced Development Objective (ADO)—Describes the general characteristics of a new effort designed to (1) fulfill an anticipated long-term operational requirement beyond present technical capabilities and/or (2) exploit a significant technological advancement with a potential military application.

Operational Support Requirement (OSR)—Describes the characteristics of equipment, skills, or techniques required to support Air Force tasks and not identifiable as part of a particular system. Headquarters AFSC is responsible for coordination of draft OSR's to insure they are in consonance with other planning programs and are technically feasible.

Specific Operational Requirement (SOR)—Describes in specific terms the required characteristics of a weapon, command and control, or support system designed to fulfill a near-term operational requirement and contains the most current conceptual guidance.

For the sake of simplicity a number of intermediate steps have been left out of Figure II, e.g., the Contract Definition Phase. What is shown are the basic steps leading up to the purchasing or contracting phase of development projects or, if the project is to be accomplished in an in-house laboratory, to initiation of the project.

FROM THE SPEAKERS ROSTRUM

Dr. Albert C. Hall

Excerpts from address titled, "The Military Space Pro- am 1965-1975," by Dr. Albert C. Hall, Dep. Dir. pace), Office of the Dir. of Defense Research & Engi- ering, before the Management Session of the Second nual Meeting of the American Institute of Aeronautics Astronautics.

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Major Areas of Defense Interests in Space

There are three general areas of Defense space interest which I will speak. These are:

- The exploitation of the space environment for specific litary purposes. Included here are such systems as com- nications, navigation, meteorology and early warning.
- The performance of military tasks by man functioning the man-machine loop in a satellite. MOL studies have amined the gains and costs associated with the use of n in the performance of tasks in space such as equip- nt assembly, fine adjustment, maintenance and repair.
- Active direct interest, in close cooperation with ASA and other Government agencies, in fields of space hnology, with strong potential defense relevancy. In s area lie booster and reentry technology, satellite bilization, geodesy and materials research.

Let me speak of this third area first because, while I l devote less time to it in this talk, it is perhaps the st important to the time period that is most difficult see, namely, the last five years of the ten-year projec- n I am asked to cover.

In the Department of Defense we categorize most of the rk here as research or exploratory development. We ploy a different yardstick to measure the programs that support because there is no sound way to say ere a fundamental idea will apply. We spent $1.5 billion these two categories this last fiscal year and plan close the same amount this fiscal year. About 10 per cent of s effort is directly related to space technologies. How- er, we recognize that our entire research effort can con- bute eventual applications in ways that are not always ar. Effective work here is highly important because it 's the groundwork for military systems of the future d it avoids technological surprise.

Another category in which work in general space tech- ogy is budgeted is advanced development. If the feasi- ity or effectiveness of a potentially important idea or posal needs to be established, the program may be car- d out here using somewhat different criteria to control decision to support the program. The work on flight tests of gravity gradient stabilization techniques is an example of a project carried on here.

The intent of the Department of Defense, therefore, is to provide flexibility in the yardstick it uses to determine whether an idea is to be supported or not. However, when a program reaches the stage where either a decision to deploy it has been made or such a decision is likely, the program is supported either in the engineering development or operational development budget. Because of the expense and importance of these efforts in those categories, as exact as possible a yardstick is used to determine whether to support the program, and we continue to look for ways to make the yardstick better.

First, we strive to carefully identify the technical, operational and economic factors which tend to influence a determination to embark on a space based military system. Second, we study competitive system approaches, including earth based systems. By going through this comparison process, we are better able to determine what is important and how it should be measured.

Obviously industry is most interested in the decisions relating to the development of systems that may be operationally deployed, and therefore I believe that it is to both industry's and the Government's interest to understand the measurement process.

Therefore, let me employ an example that is related to others that you may think of yourselves.

One of the earliest suggestions for a practical operating satellite system to accomplish a desired objective of satisfying an earth based need was a system for global navigation. The initial work, supported in the early days by Advanced Research Projects Agency (ARPA), was the outgrowth of work done by William Guier and George Weiffenbach at the Applied Physics Laboratory (APL) of Johns Hopkins University in the very sophisticated analysis of the doppler shift noted from the first Sputnik. The specific suggestion for a possible navigation system based upon the doppler technique was made by Frank McClure of APL.

The detailed system to accomplish global navigation with the aid of special artificial satellites became a recognized program in ARPA in 1959. System development was transferred from ARPA to the Navy in 1960.

The military satellite navigation system became operational in July 1964 and is providing very precise position fixing inputs to a variety of naval units including, of course, the Fleet Ballistic Missile System. The DOD is currently exploring the potential for extension of satellite navigation to other military units which require precise knowledge of position. Satellite navigation appears attractive for use in military aircraft. It would also appear attractive in solving relative position and geographic position ambiguities which are of concern to our antisubmarine warfare forces and attack carrier forces.

In order to understand why we should seriously consider satellites for this function, we may ask ourselves the following questions:

- What military systems require the most precise all-weather position fixing accuracy and to what degree may we accept less accuracy to meet less stringent system needs?
- Who are the potential users, what is the volume of traffic and what is the spectrum of system accuracy needed to be responsive to user requirements?
- What limitations are there with regard to frequency of position fix demand by multiple users?

- How secure must the system be? Does it provide a passive mode so that its employment does not unmask the positions of the user?

- Does the system offer capabilities beyond position fixing such as limited communications and traffic control potential. What does it mean to incorporate such a feature in terms of satellite power, band-width, multiple access and the ability to use small compact ground or seaborne terminals and antenna systems? Must the functions be coupled or can they be decoupled?

- Will foreign basing of ground elements of the system be required and how could this requirement affect system selection?

- Is it cost effective when compared with other earth-based systems in being or under development? And, of course, is it operationally attractive.

It is generally recognized that artificial earth satellites have potential for providing a reliable means of obtaining a position fix under all weather conditions and several systems seem to be technically feasible. The doppler shift technique, used in the current Navy operational satellite is one approach; range measurement obtained through one or more satellites is another; and measurement of range and angle by means of interferometer technique is another.

Let us consider the kinds of position fixing that military needs may place on navigation systems. Mobile strategic systems such as the manned strategic bomber and the Fleet Ballistic Missile System demand very high accuracy and measurement in suitable coordinates. Mobile tactical missile systems and the position fixing requirements for anti-submarine warfare; naval gunfire support and field artillery support may require even higher accuracy and target location in relative coordinates. Finally, there are a large number of logistic needs, aircraft and ships, which require very high navigation accuracy at the terminal points but much less accuracy in mid-course range.

A challenge for industry could be the design and fabrication of a cost-competitive space system which, when coupled with a variety of ground-based segments, would provide the degree of accuracy required by multiple users at costs commensurate with individual user needs. From a military point of view such a system should be capable of use in a simple, foot soldier man pack; an aircraft; a tank; a ship or a submarine, providing the degree of precision pertinent to the mission. There is no single solution to this general problem today. Indeed, a single solution may not be required. Moreover, the importance of certain of the applications is such that particular solutions are worth supporting. Thus, the deployment of the Navy navigation satellite to support the Fleet Ballistic Missile. However, other applications may call for entirely different navigation systems and indeed non-satellite systems may be better. . . .

A Challenge for Exploiting Satellites in Relative Location and Tactical Application

The preceding discussion illustrates that there are competitive factors to be weighed in considering satellites for position fixing applications. Nevertheless, there are many applications in which high accuracy in relative coordinates is badly needed.

Let me identify some of the applications:

- Air and surface target coordination between multiple units. This includes close air support, interdiction and ASW.

- The spotting in local map coordinates of landing and artillery units.

- Over the horizon shore and tactical ballistic missile bombardment.

- The determination of land and sea target coordinates to fire control accuracies by aircraft photo-mapping methods.

- Tactical coordination and control of carrier operations.

- The scheduling and control of amphibious and combat ground forces including the mobile army.
- Rendezvous at sea replenishment operations under radio and radar silence.
- The scheduling and control of ordinary air traffic and ship movements across broad ocean areas.

The choice of space designs for any of these needs, however, should consider the type of competitive question exemplified above.

Manned Military Systems

Among the interesting and challenging questions facing the Department of Defense today is the one relating to the potential role of manned spacecraft for military missions. We have examined these questions in detail for some time now during the course of the Manned Orbiting Laboratory study and have gained a much better understanding of the ways man may be useful in space. This understanding has been influenced by several factors. First, is the extensive and successful manned space program of NASA in which the military participates broadly in such areas as ground facilities, recovery, launch vehicles, astronauts and specific military experiments. Second, the results of the military space program have provided us with a better appreciation of the advantages and limitations related to unmanned satellites. DOD has launched hundreds of unmanned satellites. DOD has launched hundreds of unmanned spacecraft with application to all credible military tasks. Third, studies of possible situations in which a manned spacecraft may be preferred to an unmanned vehicle. An examination of this latter factor may be of interest to you.

The Importance of Man

We have recognized for some time that in space man's ability may be particularly significant in tasks such as:

- Equipment assembly.
- Fine adjustment of equipment.
- Adaptive mission programming.
- Maintenance and repair.
- Data screening.
- Selective reporting.

However, let me say that we have not discovered any military missions which are absolutely unique to the manned mode. We do find circumstances where it appears that the manned mode offers quantitative improvements in the effectiveness of the mission compared with the unmanned mode. However, we cannot, in planning expensive programs, proceed on the intuitive belief that man may find something to which his special abilities will apply.

Our unmanned experience tells us that it is likely that only complex tasks will require a man in space. However, it should also be recognized that complex missions may be difficult to do with a small group even though they be specially trained. Take the launch operation of the Titan II-Gemini as a current example: There are over 100 mission support people not directly involved at Cape Kennedy, there are almost 350 personnel involved with the spacecraft at the Cape and the launch crew itself numbers 165 people. Total highly educated and highly skilled people involved in one Gemini launch operation to support two astronauts is over 600. . . .

Now let me review briefly factors affecting the cost of manned missions. The Mercury spacecraft, for example, weighed 3,000 pounds and sustained one man in space for three days. Except for the man himself, there was no room for useful experiments. The Gemini spacecraft weighs 7,000 pounds and is capable of sustaining two men for about 7-14 days. Here again, useful space to perform meaningful experiments (again excluding man himself as an experiment) is limited to a few hundred pounds.

We have found that a manned spacecraft requiring two men on orbit for 30 days dictates that almost 20,000 pounds of orbital weight be allocated exclusively for their support in orbit and return to earth without contributing to the discretionary payload. Included here is at least 400 cubic feet of unencumbered pressurized free space per man to function in a well protected shirtsleeve environment. Allowances must be made for an exercise area as well as functional work and housekeeping areas. Finally, not to be forgotten is the need to carry along several thousand pounds of useful experiments.

A typical mission cost for delivering a multi-manned satellite in low earth orbit can be estimated. For example, the launch vehicle may be $15-20 million, the return vehicle may cost between $10-20 million, a payload of 5-10 thousand pounds of equipments, if past experience is a guide, may cost $5-10 million, on orbit support may add about $10 million and, finally, recovery force deployment and operations have been estimated at $5-10 million. Total mission cost, then, could be between $45-70 million per mission.

On the other hand if the same mission could be achieved by automatic equipment programmed from the ground, one could afford to raise the equipment weight from 5-10 thousand pounds to 25,000 pounds, and increase the payload investment from $5-10 million to perhaps $20 million without exceeding the investment devoted to the manned system. On the other hand, on orbit equipments weighing 25,000 pounds even with redundancy may require man servicing to keep them operating. It seems clear then that manned space systems must involve complex functions with ultimate relations provided between man and the equipment to prove effective.

The area in which man may pay for his place in space is his ability to cope with the unexpected, but the possibilities must still be largely foreseen and provided for to permit a limited crew, with limited facilities, to handle the situations that may arise.

In summary, then, manned space flight undertakings will be expensive, and the payloads which man will accompany into orbit must justify his presence in the man-machine loop in orbit if the manned system is to be cost competitive. These payloads and the launch vehicle systems which will place them in orbit are expensive, complex mechanisms. They will require the concentration of some of our scientific and engineering manpower for a long-period. The value of the mission clearly must rest on the necessary presence of man in the satellite.

Conclusions

I have attempted in the short time allotted to me to describe how the Department of Defense views space systems and their development in the light of (1) Defense space interests, (2) what we consider important and how we measure it and (3) how we view the manned versus unmanned question.

Let me close by projecting the military space program into the future in general terms.

It is likely that military interest will remain focused primarily on near-earth missions, out to synchronous orbit, certainly through 1975. We expect to continue our very large and vigorous unmanned military space program which is performing very important functions. The need for these programs will not diminish since they are by far the most efficient and cheapest way of performing specific tasks. With a steadily increasing experience and knowhow in manned space flight, we may expect that spacecraft will acquire characteristics permitting rendezvous, station-keeping, docking and transfer of man and material. We will likely acquire the means of sustaining military men in space for the periods of time we require. Booster capacities are not likely to limit the applications, but the booster and payload costs will continue to do so.

There is nothing hostile or aggressive in the military space program we foresee. It is entirely within the context of a national program expressly devoted to peaceful purposes. As the President has stated on many occasions, "It is understood that the United States does not have a division between peaceful and non-peaceful objectives in space, but rather has space missions to help keep the peace and space missions to improve our ability to live in peace.

Lt. Gen. A. D. Starbird, USA

Excerpts from address titled, "Our Changing Strategic Communications," by Lt. Gen. Alfred D. Starbird, USA, Director, Defense Communications Agency, before the Armed Forces Communications Electronics Association.

* * * * * * * * * * *

Let me speak now on some of the more critical hardware trends which I believe will continue to be of particular interest to the Government.

- I mentioned earlier the effort under way in automatic switching. Unfortunately most of the Government agencies' switching programs were started before the National Communications System (NCS) concept of linking together became critical. Each of these agencies is now trying to adapt its equipment and procedures to be compatible one with the other. Industry could help tremendously if in future proposals it will bear in mind this necessity for the interplay of all NCS subsystems.

- If we are to avoid increasing tremendously our costs, as the increasing traffic requirements which are a certainty fall upon us, we must have ways of effecting maximum loading on our transmission and switching backbone. Therefore, all of us with the Government are interested in any equipments which will help in this regard, those which will give us highest data rates for the band width available, those which reduce errors and reruns and those which permit rapid voice/data alternate use. And in this latter regard, we want the help of all in overcoming parochial barriers that prevent complete flexibility for alternate voice/data transmission.

- The cable circuits which commercial carriers have brought in have improved tremendously our communications to new areas of the world. Then, too, all of us are delighted at the new Communications Satellite Corporation's successful Early Bird, which opened a new, wideband, trans-oceanic horizon. Yet in spite of the cables, and the planned COMSAT additions, it will be many, many years before all sections of the world will be adequately reached. As of the present, some 75% of the capitals of the Free World can be contacted only by lower dependable, high frequency radio. And planned commercial resources will not improve this situation greatly for many, many years to come. This is an enigma—and a dangerous one—at a time when diplomatic and military events repeatedly require that the most remote areas be reached rapidly. It is this need to reach reliably even the more remote locations that has led the Government to conclude that it must develop a Defense Communications Satellite System to serve limited, but vital and unique, national security requirements. The Defense Communications Satellite System, working with small ground terminals, would enable us to install in a matter of hours minimum but reliable communications to any new area. With its special security features, it will give us also a more survivable thin-line net for command even under a condition of attack.

- While speaking of the various transmission media, I should add a word about two long-haul types I have not earlier discussed—tropospheric scatter and high frequency radio. The Government has installed in the last five years rather mammoth scatter systems crossing the North Atlantic, traversing much of the Pacific and criss-crossing Europe. Additions to these will be made, but these additions will be primarily in the nature of upgrading rather than the adding of backbone routes.
- We will continue to place heavy reliance for many years to come in our strategic communications on high frequency radio. The Government operates at the present time over 250 point-to-point trunks, of several thousand circuits—primarily to remote locations or as back-up along critical, high reliability routes. I do not look for a major increase in the number of such strategic high frequency point-to-point trunks. In fact, the number should decrease slowly with time. I should stress, however, the decrease will be gradual and every effort will be made to upgrade the residual trunks to higher reliability. We are very interested, therefore, in means of accomplishing such improvements where the cost is not prohibitive.
- Most of the equipment measures that I have mentioned so far apply to the long-haul media itself. Yet it does no good to transmit information instantaneously end-to-end only to have that information bog down in the digestion and distribution process. And we are having indigestion. As a bicarbonate, we are carrying on increasing effort to introduce automation in our information and distribution centers. However, much more is needed in inventiveness at these terminal ends. This, to me, is an open field for invention and development.

In closing, let me re-emphasize that I know that the traffic volume and transmission quality required in our strategic systems will continue to increase tremendously with time. Only by understanding and inventiveness on the part of the Industry-Government team can these requirements be adequately fulfilled. Yet these increasing needs must be fulfilled if we are to maintain our national security and economic pre-eminence.

Automatic Data Field Systems Command Activated

The Automatic Data Field Systems Command (ADFSC) is the newest organization of the U.S. Army Combat Developments Command (CDC) and U.S. Army Materiel Command (AMC). Located at Fort Belvoir, Va., the new command replaced the CDC Command Control Information System Group and the AMC CCIS–70 project.

The mission of the new command is to manage the efforts and resources set forth in the Department of the Army Implementation Plan for "Automatic Data Systems within the Army in the Field."

Included in the ADFSC are an Army Augmentation Element at the U.S. Air Force Joint Systems Program Office, Wright-Patterson AFB, Ohio; the Automatic Data Field Systems Design Agency, Fort Huachuca, Ariz.; and offshore activities which will be responsible for introduction of new equipment and assisting in systems design and experimentation in overseas areas.

Brigadier General Roger M. Lilly commands the new organization.

Deep Submergence Rescue Vehicle

(*Continued from page* 2)

- Outboard-hung propeller pads.
- Cycloidal propellers.
- Fluid jet control.
- Conventional propeller with tail fin and side thrusters.
- Tandem propellers.
- Stern propeller with controllable ring tail surface and transverse thrusters both fore and aft (as in Figure 2).

The following factors were of prime importance in selecting the propulsion system:

- Power required to develop thrust.
- Thrust efficiency.
- Size and weight.
- Mechanical complexity.
- Control flexibility.
- Space envelope.

The outboard propeller pads and cycloidal propeller systems would have provided a highly maneuverable vehicle. However, these systems were eliminated principally because they required detachment for air transport and were susceptible to damage or fouling with underwater cables or debris.

The single screw propeller with controllable ring tail shows promise of providing excellent performance. Hovering control in pitch, yaw, sway and heave is provided by a pair of thruster ducts located at the bow and stern. Roll control is provided by a mercury trim system. This combination of propeller and thrusters will provide dynamic control in five degrees of freedom. The tandem propeller concept is also being considered for the potential propulsion system. This system would provide excellent low speed maneuvering capability with dynamic control in six degrees of freedom. Additional model and simulator studies are being conducted in order to choose the most optimum propulsion system.

Figure 3 indicates the many types of sensors required to successfully accomplish a search and rescue mission. It is obvious that the location of these sensors are closely interrelated with the design and the functional effectiveness of the vehicle.

I would now like to describe the "electronic brain" of the rescue vehicle. There are at least eight principal functions that will have to be accomplished during a mission cycle:

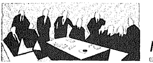
- Take-off and landing on mother submarine.
- Navigation.
- Communication.
- Sonar search.
- Hovering control.
- Television viewing.
- Manipulator control.
- Mating to sunken submarine.

It is obvious that two operators would have a difficult time performing all these functions if separate controls and displays were used. We, therefore, are developing an integrated control which will readily permit two men to operate this vehicle. All sensors, navigation and propulsion equipment will provide electrical signals into a computer and common display. Thus, to control the vehicle the operator will merely command a direction and velocity and the computer will transmit control signals to the individual propulsion and control units. Without such a control system, it would be exceedingly difficult, if not impossible, to perform a submerged mating operation under adverse conditions of attitude and current.

We have completed the preliminary design of the first prototype rescue vehicle and have recently issued a Request for Proposal to industry for the design and fabrication of this vehicle. We expect to issue a contract award by late 1965 and begin fabrication by July 1966. An at-sea operational capability of this vehicle is expected by the end of 1968.

Present plans call for five tactical vehicles to be constructed, one to be awarded in FY 1967 and four in FY 1968. By 1970, the Navy will have a new world-wide rescue system, capable of reaching a disabled submarine within 24 hours after receipt of the distress signal.

Perhaps even more significant is the fact that our new deep rescue vehicles will open the frontiers of Inner Space. We can indeed look forward to a new generation of deep-sea craft which will be capable of exploring the heretofore non-reachable ocean depths.



MEETINGS AND SYMPOSIA

OCTOBER 1965

Ninth Annual Organic Chemistry Conference, Oct. 5-6, at Natick, Mass. Sponsor. Army Natick Laboratories. Contact: Dr. Louis Long, Jr., Asst. Head, Organic Chemistry Laboratory (PRD), Army Natick Laboratories, Kansas St., Natick, Mass.

J. M. Burgers' 70th Anniversary Symposium on the Dynamics of Fluids and Plasmas, Oct. 6-8, at the University of Maryland, College Park, Md. Sponsor: Air Force Office of Scientific Research. Contact: Mr. P. A. Thurston (SREM), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D. C. 20333, telephone (Area Code 202) OXford 6-3442.

1965 Congress of the International Federation for Documentation (FID), Oct. 7-16 at Washington, D. C. Sponsors: Air Force Office of Scientific Research, Office of Naval Research, Army Research Office, National Science Foundation and Council on Library resources. Contact: Rowena Swanson (SRIR), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D. C. 20333, telephone (Area Code 202) OXford 6-5374.

International Conference on Dynamic Stability of Structures, Oct. 18-20, at Evanston, Ill. Co-sponsors: Air Force Office of Scientific Research and Northwestern University. Contact: Professor George Herrmann, The Technical Institute, Northwestern University, Evanston, Ill. 60201.

Photovoltaic Specialists Conference, Oct. 18-20, at NASA-Goddard Space Flight Center, Greenbelt, Md. Sponsors: American Institute of Aeronautics, Institute of Electrical and Electronics Engineers and the Air Force Propulsion Laboratory. Contact: J. Wise (APIP-2), Wright-Patterson AFB, Ohio, telephone (Area Code 513) 253-7111, ext. 3-5127 or 2-0186.

1965 Annual Conference on Nuclear Science, Oct. 18-20, at San Francisco. Co-sponsors: Institute of Electrical and Electronics Engineers Group on Nuclear Science and the Air Force Office of Scientific Research. Contact: Dr. D. G. Samaras (SREP), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D. C. 20333, telephone (Area Code 202) OXford 6-3769.

Matric Method & Structural Mechanics, Oct. 26-28, at Wright-Patterson AFB, Ohio. Sponsor: Air Force Flight Dynamics Laboratory. Contact: J. Steward (FDE), Wright-Patterson AFB, Ohio, telephone (Area Code 513) 253-7111, ext. 2-3120.

Thirty-fifth Shock and Vibration Symposium, Oct. 26-28, at the Jung Hotel, New Orleans, La. Sponsor: NASA. Contact: Mr. W. W. Mutch, Shock and Vibration Informstion Center, Code 4021, U.S. Naval Research Laboratory, Washington, D. C. 20390.

NOVEMBER 1965

V/STOL Symposium, Nov. 3-4, at Wright-Patterson AFB, Ohio. Sponsor: American Helicopter Society. Hosts: Aeronautical Systems Div., Research and Technology Div. and Systems Engineering Group. Contact: George Dausman, Wright-Patterson AFB, Ohio, telephone (Area Code 513) 253-7111, ext. 2-5104 or 2-3164.

Incentive Contract Workshop, Nov. 13, at Cape Kennedy, Fla., and by closed circuit TV at Orlando, Daytona Beach, and Gainsville, Fla. Sponsor: National Contract Management Assn. Contact: Mr. Donald Hocking, P. O. Box NCMA, Cape Kennedy, Fla. 32920, telephone (area code 305) 853-3940.

Fourth Hypervelocity Techniques symposium, Nov. 15-16, at Arnold Air Force Station, Tenn. Sponsors: Arnold Engineering Development Center, ARO, Inc., and Denver Research Institute. Contact: J. Lukasiewicz, Arnold Air Force Station, Tenn., telephone (Area Code 615) 455-2611, ext. 7204 or 7205.

Fourth Annual Symposium on Physics of Failure in Electronics, Nov. 16-18, at the Illinois Institute of Technolgy Research Institute. Co-sponsors: Rome Air Development Center and the Illinois Institute of Technology Research Institute. Contact: Joseph Schramp (EMERP), Rome Air Development Center, Griffiss AFB, N. Y., telephone (Area Code 315) FF6-3200, ext. 2813.

DECEMBER 1965

Fourteenth Annual Wire and Cable Symposium, Dec. 1-3, at the Shelburne Hotel, Atlantic City, N. J. Sponsor: Army Electronics Command. Contact: Milton Tenzer, Symposium Chairman, Electronic Parts and Materials Div., Army Electronics Laboratory, Fort Monmouth, N. J. 07703, telephone (Area Code 201) 535-1834.

International Symposium on Differential Equations and Theory of Systems, Dec. 27-30, at the University of Puerto Rico. Sponsors: Air Force Office of Scientific Research, Brown University and the University of Puerto Rico. Contact: Maj. B. R. Agins (SRMA), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave. S.W., Washington, D. C. 20333, telephone (Area Code 202) OXford 6-1302.

JANUARY 1966

Research Effectiveness as Related to Vehicles, Jan. 28-29, at Detroit, Mich. Sponsor: Department of the Army. Contact: Paul D. Denn, Chief, Research Div., U.S. Army Mobility Command, Warren, Mich., telephone (Area Code 313) 756-1000.

International Symposium on Information Theory, Jan. 31-Feb. 2, at the University of California at Los Angeles, Los Angeles, Calif. Co-sponsors: Air Force Office of Scientific Research and the Information Theory Group of the Institute of Electrical and Electronics Engineers. Contact: Prof. J. Carlyle, UCLA, Los Angeles, Calif., telephone (Area Code 213) 478-9711, ext. 7181.

MARCH 1966

Conference on Space Maintenance and Extra-Vehicular Activities, March 1-3 at Orlando, Fla. Sponsor: Air Force Systems Command's Aero Propulsion Laboratory, Wright-Patterson AFB, Ohio. Contact: Chester B. May, Aero Propulsion Laboratory, Wright-Patterson AFB, Ohio.

Conference on Functional Analysis, March 28-April 1, at the University of California, Irvine, Calif. Co-sponsors: Air Force Office of Scientific Research and the University of California. Contact: R. G. Pohrer (SRMM), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D. C. 20333, telephone (Area Code 202) OXford 6-5248.

Second International Symposium on Aerobiology, March 29-30, at Chicago. Co-sponsors: Department of the Army and Illinois Institute of Technology Research Institute. Contact: Elwood K. Wolfe, Director of Technical Services, Fort Detrick, Frederick, Md., telephone (Area Code 301) 663-4111, ext. 2214.

Bionics Symposium 1966, dates undetermined, at Sheraton Hotel, Dayton, Ohio. Sponsors: Aerospace Medical Research Laboratory, Aerospace Medical Division, and Avionics Laboratory, Research and Technology Division. Contact: Dr. H. L. Oeistreicher (MRBAM), Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio, telephone (Area Code 513) 253-7111, ext. 3-6108.

CALENDAR OF EVENTS

Oct. 11: National Aerospace Services Assn. Annual USAF Contract Aerospace Services Symposium, Dayton, Ohio.
Oct. 19-20: Electronic Industries Assn. Systems Effectiveness Conference, Sheraton - Park Hotel, Washington, D. C.
Nov. 2-5: Annual Industrial Trade Fair, Los Angeles, Calif.
Nov. 2-5: Data Processing Management Assn. Meeting, Dallas, Tex.
Nov. 7-11: National Electrical Manufacturers Assn. Meeting, Washington, D. C.
Nov. 7-12: American Society of Mechanical Engineers, Chicago, Ill.
Nov. 8-10: American Petroleum Institute Convention, Chicago, Ill.
Nov. 10: 190th Anniversary of U. S. Marine Corps.
Nov. 15-19: American Nuclear Society Meeting, Washington, D. C.
Nov. 15-19 Atomic Industries Forum, Washington, D. C.
Nov. 17-19 Industrial Management Society Meeting, Chicago, Ill.
Nov. 20: Artillery Firepower Demonstration, Fort Sill, Okla.
Nov. 29-Dec. 3: Chemical Industrial Exposition, New York, N. Y.
Nov. 30-Dec. 2: Electric Industries Assn. Meeting, Los Angeles, Calif.
Dec. 6: National Aerospace Services Assn. Army Aviation Contract Services Symposium, Washington, D. C.
Dec. 8-9: National Security Industrial Assn.-Air Force Systems Command Microelectronics Conference, Washington, D. C.

CORRECTION

The location of the American Ordance Assn. Equipment Manual Sypmposium was incorrectly listed as Washington, D. C. It will be held at the Statler Hilton Hotel, Dayton, Ohio.

Additional DCAS Regional Offices Established

Two new Defense Contract Administration Services Region offices were opened in August in Boston, Mass., and Cleveland, Ohio, to help military buying agencies complete work on defense contracts.

A New York Region office is scheduled to be activated Nov. 1 and Los Angeles and San Francisco regions will begin operations Dec. 1.

The new offices will bring the total number of regional units to eight with offices already established by the Defense Contract Administration Services (DCAS) in Philadelphia, Detroit and Dallas. Three more are planned for the future.

Work performed by the regional offices includes pre-contract award surveys of contractors' facilities and financial status, quality assurance, security clearance for plants and personnel, payments to contractors and similar functions required by the Government during the manufacture and maintenance of defense materiel.

Commanded by Colonel Frank A. Bogart, USA, the Boston Region has responsibility for providing contract administration services in Vermont, Maine, Rhode Island, Massachusetts, Connecticut, New Hampshire and New York (except those areas under the jurisdiction of the New York office).

The Boston Regional office is located at 666 Summer St., Boston. Two subordinate Defense Contract Administration Services Districts are located in Hartford, Conn. and Rochester, N. Y.

Colonel Norman T. Dennis, USA, directs the operation of the Cleveland Regional Office which is located at 1367 East Sixth St. The Cleveland office is responsible for providing contract administration services in Kentucky and Ohio as well as Crawford, Erie and Mercer Counties in Pennsylvania.

Heading the New York Region will be Brigadier General Clarence W. Clapsaddle, Jr., USA. The New York District will include New York City, Long Island, the New York counties of Orange, Putnam, Rockland, Westchester and the New Jersey counties of Middlesex, Monmouth, Somerset, Hunterdon and all counties north.

AUSA Annual Meeting Scheduled in October

The 1965 annual meeting of the Association of the United States Army (AUSA) will be held October 25, 26 and 27 at the Sheraton Park Hotel, in Washington, D. C. More than 3,500 officers, enlisted men and Army-interested civilians from all parts of the United States and from overseas are expected to attend the meeting.

Secretary of the Army Stanley R. Resor will deliver the meeting's keynote address on Oct. 25 and Army Chief of Staff General Harold K. Johnson is scheduled to speak before the annual AUSA Luncheon on Oct. 26.

The program will include presentations on Air Mobility, the Army's Role in Stability Operations, Army Operations in the Dominican Republic, Combat Developments and Reserve and ROTC Affairs.

More than 60,000 square feet of space will be taken up in the hotel for exhibits by industry reflecting the latest scientific and technical advances in the military field. An additional 30,000 square feet of Army exhibits and items of Army equipment is planned.

The annual George Catlett Marshall Memorial Dinner will take place on the evening of the last day of the meeting.

Registration will begin at the hotel at 11 a.m., Oct. 24. Advance registration information may be obtained by writing the Association of the United States Army, 1529 18th Street, N.W., Washington, D. C. 20036.

Small Business Workshop to be Held in Philadelphia

The Department of Defense, joined by the National Security Industrial Association and the Department of Commerce, will hold a Small Business/Labor Surplus Area Workshop for approximately 20 prime contractors located in the Philadelphia Defense Contract Administration Services (DCAS) Region in Philadelphia on October 19, 1965.

The purpose of this one-day workshop is to conduct a Government/industry discussion of the DCAS organization and concept of operation, and recent changes in small business and labor surplus programs related to set-asides and subcontracting activities.

Future workshops are planned for each of the remaining DCAS regions with dates to be announced later.

BIBLIOGRAPHY

DOD Directive 7600.2, "Department of Defense Audit Policies, Aug. 19, 1965. Prescribes basic policies with respect to internal and contract audit in the DOD, and sets forth organizational responsibilities for carrying out the audit functions.

DOD Directive 5220.22, "Department of Defense Industrial Security Program," July 30, 1965. Updates the DOD Industrial Program (DISP) by realigning and delineating responsibilities and functions connected with (1) the DOD Industrial Security Manual (ISM) and the DOD Industrial Security Regulation (ISR) and (2) security cognizance under the DISP.

DOD Directives may be obtained from:

Publications Distribution Branch
Office of the Secretary of Defense
Room 3B 200, The Pentagon
Washington, D. C. 20301

Weekly Compilation of Presidential Documents. This new service makes available transcripts of the President's news conferences, messages to Congress, public speeches and statements and other Presidential materials released by the White House up to 5 p.m. each Friday. The Weekly Compilation carries a Monday date line.

Subscription price: $6.00 a year.

1965-66 United States Government Manual. Official organization handbook of the Federal Government.

Catalog No. GS 4.109:965 $1.75

Selling to the Military. This pamphlet provides business firms basic steps and initial contacts for locating sales opportunities in the Department of Defense. It gives information on items purchased and locations of military offices. Rev. 1965.

Catalog No. D 1.2:Se4/965 35¢

Army Procurement Procedure. Prescribes policies, procedures and standards governing the procurement of supplies and services by the Department of the Army. Revised April 1, 1965.

Catalog No. D 101.6/4:965 $2.00

Publications that require remittance are available for purchase at U.S. Government Printing Office, Washington, D. C. 20402.

Order *AD 617 337N Inelastic Buckling Tests of Ring-Stiffened Cylinders Under Hydrostatic Pressure,* Navy David Taylor Model Basin, Washington, D. C., May 1965, 42 pp., $2.00.

Order *AD 615 723N The Effects of Continuous Vibration of Concrete During Initial Set,* University of Arizona for the Air Force, April 1965, 74 pp., $3.00.

Order *AD 616 098N Continuous Measurement of Solid Propellant Burning Rates,* Jet Propulsion Center of Purdue University for the Air Force, Feb. 1965, 58 pp., $3.00.

Order *AD 617 107N A Review of Hypersonic Wake Studies,* RAND Corp., for the Advanced Research Projects Agency, May 1965, 89 pp., $3.00.

Order *AD 617 759N Trends in Hard Materials: Report of Task Force No. 3 of the Ad Hoc Machine Tool Advisory Committee to the Department of the Air Force,* Air Force Jan. 1965, 33 pp., $2.00.

Government research and development reports are available to science and industry at:

Clearinghouse for Federal and
Scientific Information
Department of Commerce
Springfield, Va. 22151

Employers Asked to Help Keep Young Americans in School

Acting in support of President Johnson's campaign to get young Americans to return to school, Secretary of Commerce John T. Connor appealed to employers nationwide to assist in every way possible in a Youth Opportunity back-to-school drive.

In announcing the campaign on August 21, the President called upon employers, unions, civic, trade and religious organizations and state and local governments to "exert every influence that they command to bring our young people facts on the importance of education."

"The President and I are asking two things of you," Secretary Connor said in an open letter to 6,000 employers.

"First, do everything possible to influence the youngsters in your community to go back to school this fall and to complete their education, and

"Second, provide as many school year part time jobs for youths as possible, especially in those cases where such a job might spell the difference between finishing school or dropping out."

AFLC Establishes Five Long Supply Assets Offices

The Air Force's Logistics Command (AFLC) has established offices at five air materiel areas to help manage the multi-million dollar "long supply" assets of the command.

The new offices have been set up primarily to uncover additional or increased uses for surplus Air Force equipment which has no immediate planned need.

New offices are located at Middletown, Sacramento, San Antonio, Ogden and Oklahoma City Air Materiel Areas.

Objective of the program is to increase the use of assets by placing a human control point in the computerized exchange of long supply goods between Federal Government agencies and AFLC.

A 90-day pilot program was recently conducted at Robins AFB, Ga., in which the Material Utilization Control Office concept, as it is called, was studied. In the test, $15.5 million of long supply assets were made available to other users by the Warner Robins Air Materiel Area (WRAMA) for use by Federal agencies. Twelve and one half million dollars in goods from other Government agencies were, in turn, made available to WRAMA.

AF Phamphlet on SEED Program Available

A pamphlet covering the Air Force's new program for the procurement of engineering data for Air Force weapons systems has been prepared and distributed by the Air Force Logistics Command (AFLC).

The program, called "Supply of Essential Engineering Data (SEED)," was designed by the AFLC in cooperation with the Air Force Systems Command. SEED procedures are being tested on the C–141 transport aircraft. The new approach is proving so successful that it will be adopted for all aircraft entering the Air Force inventory. (See article, "New Program for Obtaining Blueprints Announced by AFLC," *Defense Industry Bulletin,* August 1965.)

The SEED pamphlet is available at Hq., AFLC, Attn: MCK, Wright-Patterson AFB, Ohio, or at any AFLC installation.

Integrated Logistics Support

Cdr. Frank N. Worden, USN
Dir., Supply Management Policy Branch
Bureau of Supplies & Accounts
Department of the Navy

Industry and the military services must consider supply management early in the conceptual phase of weapons support by designing a logistic support system concurrently with the development of the hardware to provide the integrated support necessary for the weapons system manager. A merging of maintenance and supply information subsystems is necessary for effective material support to provide analysis required by program managers. Managers must receive this type of data from the supply system design to minimize support costs.

The references listed in the bibliography have been freely plagiarized for this article. The author desires that the subject matter receive the attention of as many professionals in supply management as possible.

Like astronauts walking in the unfamiliar environment of outer space, industry and the Military Services are testing the environment of "integrated logistic support." Not all of the concepts are new, but in today's management world of technical supply—replete with such terms as maintainability, supportability and reliability—we are experiencing first hand new complexities in the solution of our material support problems.

Our new environment has been created by the publication of DOD Instruction 4100.35 of June 19, 1964, (affectionally known as "Point Thirty-five"). This instruction establishes policies and objectives governing the systematic and orderly development of integrated logistic support for both systems and equipments.

Integrated logistic support has a far-reaching impact on both the military and the industrial complex of our nation and we should understand the significance of this concept on our respective roles. The impact may initially be the embryo of revised contractual relationships; it could grow into a dictionary for the definition of tasks and evolve finally as the patriarch for the assignment of missions and duties.

Elements of Integrated Logistic Support

Integrated logistic support is a composition of the elements necessary to assure the effective and economical support of a system or equipment at all levels of maintenance for its programmed life cycle. It is important to recognize that a balance of the elements involved is necessary. These elements include planned maintenance, logistic support personnel, technical logistics data and information, support equipment, spares and repair parts, facilities and contract maintenance.

Note that the selection of spares and repair parts is but one element of integrated logistic support. Their selection must be balanced against the requirements of all other elements. Perhaps the most significant aspect of this concept, as it applies to the management of spares and repair parts, is that the planned maintenance element requires decisions as to what will be repaired, who will repair it, when and where it will be repaired and how it will be repaired.

These decisions are made by the project manager early in the chronology of events as inputs to technical development plans and budget requirements. Once these decisions are made, the selection of the range and quantity of items (i.e., supply and repair parts, special tools, test equipment and support equipment) required to support and maintain an item for an initial period of service (defined as "provisioning" in DOD instructions) is, in a sense, predetermined.

Maintainability a Key

Planned maintenance can be accomplished most effectively when the relatively new concept of maintainability is considered. The concept of maintainability requires an integration of design and maintenance engineering effort to provide controls which help or assure the manager that he has a system or an item of equipment that not only meets performance requirements but also one that can be supported expeditiously and economically.

Maintainability is the design parameter that facilitates integration of support considerations during the conceptual phase of weapon development and helps provide a means for the orderly and disciplined identification of the hardware, maintenance procedures, personnel subsystem, technical manuals and data, facilities, support equipment, etc., during the definition and development phases of the weapon system.

The development of a system performance and the development of integrated support requirements are paralleling and interrelating efforts from the embryonic period of the system life cycle until it is phased out of the inventory. Performance indices for reliability, accuracy, range, payload ready rate, etc., cannot be considered independently. They must be considered by the project manager together with maintainability to achieve the best overall result. We must obtain the best balance between reliability cost, production cost and support cost. Therefore, these trade-offs must be computed and analyzed as early as possible so that the proper balance can be achieved.

We cannot afford to wait until after a weapon system or piece of equipment has been produced to analyze it for the purpose of determining whether the maintainability is good. This is after the fact. Unfortunately, we have far too many examples of too much emphasis on performance and too little on support of an item or a system.

Such deficiency in program management has resulted in the creation of many costly engineering change proposals, in unsatisfactory provisioning, excessive maintenance requirements, unnecessary special tools, elaborate and complex test and support equipment, poorly written or incomplete technical manuals and inept planning for maintenance personnel.

Maintainability is not just maintenance which, like Topsy, usually grows to fit a design. Maintainability is a systematic, common sense approach to design and is a prerequisite to the development of an integrated logistic support package perfected as the equipment or system is perfected to make sure we won't go broke maintaining it.

Cdr. Frank Worden attended the University of Michigan and was awarded a BBA degree. In 1945 he was graduated from the Navy Supply Corps School at Harvard University and commissioned an ensign in the Supply Corps. Subsequently he served in several assignments in the Supply Corps.

In 1963 Cdr. Worden was awarded an MBA degree from the George Washington University and assigned to the Office of Naval Material. In late 1963, he was transferred to the Bureau of Supplies and Accounts where he is now serving as Director of the Supply Management Policy Branch.

Maintainability, in the context described above, has been with us for only about seven years. It is still a juvenile, but with the "fatherly" backing it received with the publication of DOD Instruction 4100.35 it will not become a juvenile delinquent. As in the case of all juveniles, there is a considerable amount of training to be accomplished. The next seven years, of necessity, will be years of intensified education until the concept is understood, the methodology and procedures perfected and the potential advantages realized. Because of its impact upon decisions for the supply management of technical material, it is important that both industry and the military emphasize the training necessary in this important area.

Management of Technical Material

Because of the inputs required, decisions made for the supply management of technical material are actually a reflection of maintenance decisions. In the past this reflection often has been more of a mirage than reality. Our maintenance planning has not always been well conceived. After-the-fact maintenance decisions have been made when contracts for the equipments to be supported were received.

Arbitrary replacement factors, usually set high because of the human tendency to be on the safe side, have been used. We have been prone to buy for distribution purposes when clear-cut operating requirements were not available. We have, on this basis, often purchased considerably more than subsequent experience proved necessary. Twenty per cent of our technical items are destined for disposal without ever having been issued.

It is a well known characteristic of technical material that the bulk of the demand is concentrated on a relatively few items. In a recent study of Navy aviation items, it was revealed that for 62 per cent of the items sampled, not one system demand occurred for an entire year. A study of cruisers and destroyers in the Atlantic Fleet indicated that 85 per cent of the items carried were not even used once from overhaul to overhaul.

Further, we have not only positioned these items aboard each ship but usually at each echelon of support as well. This type of demand data is not unusual for technical items placed in the supply system in support of maintenance decisions. But in the light of these data, the justification necessary to support additional requirements at the budget table is exceedingly difficult.

Just as significant, estimates made at provisioning (or even before) could result in a critically short supply of a part. The error may be actually one in equipment design, failure to consider operating requirements, or perhaps one which is induced in the maintenance cycle. The latter is especially true for new equipments entering the Fleet. As the critical part fails and replacements are not available, equipment down-time increases.

This type of problem may "masquerade" as a supply problem when in actuality it is not a supply problem at all. It must be solved by redesign, changing maintenance concepts, or in some similar manner. Increased investment in parts can, for a time, alleviate the immediate downtown problem, but it may be only an expensive way to treat the symptoms; it may not cure the disease.

It is the thesis of those who would support the concept of integrated logistic support that this investment in inventory does not result in the most economical allocation of our resources. This type of supply problem may be more economically solved in the planning and development stages of equipment design.

A blueprint for logistic support is needed similar to the manner in which the design disclosure drawing is a blueprint for the hardware. This blueprint can be in the form of the Maintenance Engineering Analysis Record (MEAR) or some other similar systematic analysis record to alleviate deficiencies in logistic planning. It also would provide a base on which to build more reliable information as experience data becomes available.

Information System

For truly effective integrated logistic support there must be a free flow of information. Data generated at each decision-making level must flow to the next echelon of decision making. Just as important, meaningful data must flow "up stream" to the previous decision-making level to verify the accuracy of previous decisions. It is necessary to insure, for example, that design changes are produced where unforeseen maintenance or purchase problems have arisen, and that future design decisions reflect the experience of maintenance or purchase personnel and their contributions to integrated logistic support.

The information system which must be designed to accommodate this concept is one which meets the need of Fleet maintenance personnel, inventory managers, contract officers, training coordinators and contractors, and which is also meaningful to those responsible for design, development and other facets of initial material support. With this necessity for integration it is important that the system design of the information sub-system used for provisioning be compatible with information systems utilized for maintenance control.

Within the Navy, basic information is being provided through the Standard Navy Maintenance Material Management Information System. Data generated by this system must provide the flow up stream to all echelons of management. The information system should be designed to distill and summarize to insure that significant facts are made available at each echelon of decision making. Thus, on an exception basis, management attention can be focused on the more economical allocation of our resources.

The necessity for the flow of this type of information to a contractor providing initial support for a weapon system is also obvious, but this should be a consideration in any contract for the more sophisticated military hardware. We are heavily dependent upon rapid technological improvements to maintain our military superiority. To facilitate engineering decisions which would minimize overall support costs in future designs, language must be placed into our contracts which would eliminate any information barrier.

Adjustment in Emphasis

Accordingly, the impact of maintainability, as utilized in the planned maintenance element of integrated logistic support, on supply management is obvous. The management of technical material, i.e., material held in support of maintenance decisions, requires a change in emphasis directed to a better integration of supply, maintenance and other logistic functions. Some of the functions of supply management that have been useful for supply problems in the past are not as pertinent in the environment of technical supply. For example, the concepts of repetitive demand and random error used to determine reorder points and other quantities become less significant.

Formulae developed on a statistical basis which reflect the probability of random error in demand are seldom as applicable for technical items since, as noted previously, their demand is a function of predetermined maintenance decisions. A large part of our research and improvement efforts in supply has been directed to development of economic order quantities, variable safety levels and similar scientific decision rules. While these have applicability to a small band of technical secondary items and repair parts, they are of little or no significance with respect to the vast bulk of items such as repairables which constitute a large part of our inventory investment. Much of our effort has been devoted to refining functional tasks of supply management. We have made progress within this area of responsibility which, when viewed alone, is impressive. But in approaching the problem of true economy, we must now view these same tasks in the conceptual light of balanced integrated logistic support.

It follows that both industry and the Military Services will be required to utilize new skills for which there is a lack of trained personnel. We must learn to use new management science techniques over and above the old EOQ (Economic Order Quantity)—variable safety level concepts. For example, simulation, using computers, is a basic

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Defense Contract Audit Agency

(*Continued from page 5*)

ments (Financial Management) and (Installations and Logistics); the Director, Defense Supply Agency, and the Director of the Defense Contract Administration Services, Defense Supply Agency. The Director, DCAA, is required to give an appropriate report to the Defense Contract Advisory Council at least twice each year.

Finally, it is the DCAA Director's intention to meet with representatives of industry associations and contractors from time to time to obtain the benefit of their suggestions as well as hear their gripes, if any, so that constructive improvements can be made and corrective measures can be taken where appropriate.

Facts on Defense Contract Audit Agency

Name: Defense Contract Audit Agency (DCAA)

Location: Cameron Station, Alexandria, Va.

Director: William B. Petty, who is responsible directly to the Secretary of Defense and receives staff supervision from the Assistant Secretary of Defense (Comptroller).

Mission and Functions:

- Audit, examine or review contractors' and subcontractors' accounts, records, documents and other evidence; systems of internal control; accounting, costing and general business practices and procedures.
- Give advice and recommendations to procurement and contract administration personnel on acceptability of costs and estimates of cost to be incurred as represented by contractors incident to the award, negotiation, modification, change, administration, termination or settlement of contracts; adequacy of financial or accounting aspects of contract provisions; adequacy of contractors' accounting and financial management systems, estimating procedures and property controls.
- Assist responsible procurement or contract administration activities in their surveys of the purchasing-procurement systems of major contractors and provide advice and recommendations to the Government management level having authority and responsibility to take action on the audit findings.
- Cooperate with other DOD components on reviews, audits, analyses or inquiries involving contractors' financial positions or financial and accounting policies, procedures or practices.
- Maintain liaison auditors, when appropriate, at major procurement and contract administration offices and provide assistance in the development of procurement policies and regulations.

Organization: Under the DCAA Headquarters at Cameron Station there are seven regional offices. More than 200 branch and resident offices will be located throughout the United States and overseas. Current addresses and telephone numbers of the DCAA regional offices are:

DCAA, Boston Region
424 Trapelo Road
Waltham, Mass. 02154
Phone: (Area Code 617)
TWinbrook 4-2400,
Ext. 613

DCAA, New York Region
207 W. 24th St.
New York, N. Y. 10011
Phone: (Area Code 212)
WAtkins 4-5000, Ext. 839

DCAA, Philadelphia Region
128 N. Broad Street
Philadelphia, Pa. 19102
Phone: (Area Code 215)
597-7450

DCAA, Atlanta Region
1776 Peachtree St., N. W.
Atlanta, Ga. 30300
Phone: (Area Code 404)
526-5987

DCAA, Chicago Region
536 S. Clark St.
Chicago, Ill. 60605
Phone: (Area Code 312)
828-6590

DCAA, San Francisco Region
450 Golden Gate Ave.
San Francisco, Calif. 94102
Phone: (Area Code 415)
556-6574

DCAA, Los Angeles Region
1206 Maple Ave.
Los Angeles, Calif. 90015
Phone: (Area Code 213)
688-8506

Navy Long Range Planning Information

(*Continued from page 9*)

RA-13	Airborne Electronic Countermeasures (SECRET)
RA-14	Airborne Navigation (CONFIDENTIAL)
RA-15	Aircraft Instruments (CONFIDENTIAL)
RA-16	Avionics Supporting Research
RA-17	Terrain Clearance Radar (CONFIDENTIAL)
RA-18	Aircraft Shaft Engines (CONFIDENTIAL)
RA-19	Aircraft Jet Engines (CONFIDENTIAL)
RA-20	Propellers
RA-21	Aircraft Auxiliary Power Systems and Starters
RA-22	Aircraft Fuels and Lubricants
RA-23	High Impulse Propulsion Systems and Electro-mechanical Power Plants for Satellite and Probe Application (CONFIDENTIAL)

Missile Development Office

RM-1	Shipboard Launching Systems and Gun Mount
RM-2	Anti-Air Warhead Technology (Non-Nuclear) (CONFIDENTIAL)
RM-3	Anti-Surface Warhead Technology (Non-Nuclear) (CONFIDENTIAL)
RM-4	Nuclear Weapon Components (CONFIDENTIAL)
RM-5	Guided Missile Fuzes (SECRET)
RM-6	Free Fall Ordnance Weapon Fuzes (SECRET)
RM-7	Cartridge Actuated Devices (CONFIDENTIAL)
RM-8	Biological and Chemical Warfare (SECRET)
RM-9	Pyrotechnics (CONFIDENTIAL)
RM-10	Missile Propulsion (CONFIDENTIAL)
RM-11	Missile Aerodynamics (CONFIDENTIAL)
RM-12	Weapon Ballistics Supporting Research (CONFIDENTIAL)
RM-13	Missile Structures (CONFIDENTIAL)
RM-14	Missile Guidance and Control (CONFIDENTIAL)
RM-15	Surface Weapons Control (CONFIDENTIAL)
RM-16	Airborne Weapons Control (CONFIDENTIAL)
RM-17	Target and Drone Control Systems
RM-18	Range and Shipboard Instrumentation

Research and Engineering Office

RR-1	Reliability, Maintainability and Safety Design Engineering
RR-2	Engineering Data
RR-3	General Use Components
RR-4	Engineering Practices
RR-5	Electromagnetic Radiation Effects on Weapons, Weapons Systems and Electronic Equipment (CONFIDENTIAL)
RR-6	Value Engineering
RR-7	Materials
RR-8	Weapons Sciences (CONFIDENTIAL)
RR-9	Energy Conversion

Ship Installations Office

RS-1	Aircraft Launcher Systems
RS-2	Aircraft Recovery Equipment
RS-3	Visual Landing Aids
RS-4	Ship Installed Aeronautical Facilities (CONFIDENTIAL)
RS-5	Air Launched Weapons Shipboard Systems (CONFIDENTIAL)
RS-6	Ship Launched Weapons Systems. (CONFIDENTIAL)
RS-7	Ship Aeronautical Systems
RS-8	Weapons Packaging and Handling (CONFIDENTIAL)

Astronautics Programs Office

RT-1	Space Defense (SECRET)
RT-2	Satellite Ocean Surveillance (SECRET)
RT-3	Tactical Probes (CONFIDENTIAL)
RT-4	Space Environment (CONFIDENTIAL)

Anti-Submarine Warfare Office

RU-1	ASW Surveillance (SECRET)
RU-2	Classification and Localization (SECRET)
RU-3	ASW Computation and Control (SECRET)
RU-4	Torpedo Component Development & Supporting Research (CONFIDENTIAL)
RU-5	Mine Component Development & Supporting Research (SECRET)
RU-6	Mine Defense (CONFIDENTIAL)
RU-7	Explosives and Explosion Supporting Research (CONFIDENTIAL)
RU-8	Navy Underwater Swimmer Assault System (NUSAS) (CONFIDENTIAL)
RU-9	Explosive Ordnance Disposal (SECRET)
RU-10	ASW Oceanographic Research (CONFIDENTIAL)

Immigrant Aliens Affected by Change in Security Regulation

Defense contractor employees who are immigrant aliens (persons lawfully admitted into the United States under immigration visas for permanent residence) and whose access to classified information is essential in the performance of classified contracts are no longer required to formally declare their intentions to become United States citizens to be eligible for personnel security clearances.

The requirement that the immigrant alien file with the Immigration and Naturalization Service an Application to Execute a Declaration of Intent (Naturalization Form N-300), as now set forth in the Department of Defense Industrial Security Manual for Safeguarding Classified Information (attachment to DD Form 441), dated March 1, 1965, has been deleted effective immediately. An appropriate amendment to the manual is being prepared.

Integrated Logistic Support

(Continued from page 23)

technique to test alternatives before decisions are made. But to use this technique requires skills in mathematics, probability theory and computer soft-ware development. A working knowledge of PERT and PERT Cost to solve complex problems in program management should be a part of the "bag of skills" we can bring to bear on complex problems. Knowledge of statistical techniques, cost analysis and system design is essential. With our dependence upon computers and communications networks for data processing, we must concentrate on the technology in data processing, systems analysis, programming, computer operations and communications. All of these techniques are now in use but we need more military officers with these skills—now, and in the future.

Summary

In summary, in the environment of integrated logistic support, forces are at work which tend to circumscribe the military supply systems of the future. These forces are moving us inexorably from the "art-of-supply" decision rule techniques, which we have developed so thoroughly, to decision techniques which are more constricted by maintenance decisions.

More than ever before we are faced with the diametrically opposed forces of ever increasing costs for the support of our new, more sophisticated weapons systems and limited resource availability. Organizationally, the response has been to place more reliance on birth-to-death management of weapons systems by weapon system managers.

It is in this framework that the concepts of integrated logistic support can flourish more readily; conversely, these concepts support this type of vertical organization. The weapon system manager can, with an information system which keeps him apprised of significant developments at all phases in the life program of his weapon system, use simulation and other available computer techniques to relate data which are essential to employing the concepts of integrated logistic support.

One example is the concept of maintainability. By providing what managers consider the cost of maintenance and related logistic support early in the design and developmental phases, this concept assists the weapon system manager in providing an orderly and disciplined method of allocating his resources over the life program of his weapon system.

One significant feature of integrated logistic support, however, is that decisions which predetermine the range and depth of support items are made long before the supply system is called upon to provision or otherwise support equipments of the weapon system. This will unequivocally change our method of doing business as usual.

In fact, Point Thirty-five presents both industry and the military with a challenge that is far-reaching. We must obtain the expertise and training necessary to participate more fully in the early decisions required of the weapon system manager if we are to remain a valuable instrument of combat readiness.

Our country has a large stake in the implementation of Point Thirty-five, for it charts as unerringly as the navigator's triangle the military logistical course for the future.

Bibliography

1. Fallon, Lt. Col. E.R., Speech on "Maintainability—A Reality, Not a Myth."
2. McDermont, Charles P., Burroughs Corp., Remarks at the Ninth Annual Meeting of the Maintenance Advisory Committee of the National Security Industries Assn. on Oct. 8, 1964.
3. Miller, Clifford J., Bureau of the Budget, Unpublished memorandum of March 6, 1964, on Material Management Programs in the Navy.
4. DOD Instruction 4100.35 of June 19, 1964, subject "Development of Integrated Logistic Support for Systems and Equipment."
5. Office of Naval Material NAVEXOSP-1500.
6. U.S. Applied Science Laboratory, booklet: "Systems Performance Effectiveness Program."

Defense Industry Bulletin Conducts Annual Survey

A survey card is being mailed to all subscribers of the Defense Industry Bulletin. This circularization is required by the Joint Congressional Committee on Printing and must be returned by the Editor on or before Oct. 15, 1965. Subscribers who do not complete the survey card will be removed from the mailing list.

A facsimile of the survey card is printed below. If you have not received your survey card, or are not a regular subscriber to the Bulletin but would like to receive the publication, please clip, fill out and mail the reproduction on this page.

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DEFENSE PROCUREMENT

Contracts of $1,000,000 and over awarded during month of August 1965:

DEFENSE SUPPLY AGENCY

3—Standard Oil Company of California, San Francisco. $1,546,134. 3,312,925 gallons of lubricating oil. Defense Fuel Supply Center, Washington, D.C.

—Texaco, Inc., New York City. $1,074,356. 1,634,193 gallons of lubricating oil. Defense Fuel Supply Center, Washington, D.C.

—Chase Bag Co., New York City. $1,363,622. 7,820,000 burlap sand bags. Defense General Supply Center, Richmond, Va.

4—Dern Kane Products, Inc., Brooklyn, N.Y. $1,792,090. 166,540 locker trunks. Brooklyn. Defense Personnel Support Center, Philadelphia.

—Gulf Oil Corp., New York City. $5,367,600. 63 million gallons of jet fuel. Defense Fuel Supply Center, Washington, D.C.

—Cherubino Petti and Co., Inc., Atlantic City, N.J. $1,080,000. 75,000 men's wool serge coats. Defense Personnel Support Center, Philadelphia.

5—Glenn Berry Mfg., Inc., Commerce, Okla. $1,172,252. 1,140,000 pairs of men's cotton sateen trousers. Commerce and Oswego, Kan. Defense Personnel Support Center, Philadelphia.

6—The following contracts were awarded for JP-5 jet fuel by the Defense Fuel Supply Center, Washington, D.C.: Socony Mobil Oil Co., New York City. $6,636,314. 73,222,000 gals.; Humble Oil & Refining Co., Houston, Tex. $6,503,400. 77,000,000 gals.; Union Oil Company of California, Los Angeles. $2,180,065. 21,403,000 gals.; Cities Service Oil Co., New York City. $2,142,831. 25,200,000 gals.; Coastal States Petrochemical Co., Houston, Tex. $1,790,407. 21,000,000 gals.

—Tennessee Overall Co., Tullahoma, Tenn. $1,095,000. 500,000 pairs of men's polyester and wool tropical trousers. Tullahoma. Defense Personnel Support Center, Philadephia.

—West Point-Pepperell, Inc., New York City. $1,986,071. Nylon cloth. Shawmut, Ala. Defense Personnel Support Center, Philadelphia.

10—Northwestern Steel & Wire Co., Sterling, Ill. $1,508,738. 155,540 coils of concertina barbed wire. Defense Construction Supply Center, Columbus, Ohio.

12—Electro Plastic Fabrics, Inc., Pulaski, Va. $1,407,480. 222,000 ponchos. Defense Personnel Support Center, Philadelphia.

—Kenneth M. Wilson Co., Centerville, Tenn. $1,482,978. 249,240 pouches. Defense Personnel Support Center, Philadelphia.

16—Dowling Bag Co., Valdosta, Ga. $1,009,400. 4,550,000 sand bags. Valdosta and Savannah, Ga. Defense General Supply Center, Richmond, Va.

24—Putnam Mills Corp., New York City. $1,417,500. 3,500,000 yds. nylon parachute cloth. Vinton, Va.; Bristol, Tenn. and Putnam, Conn. Defense Personnel Support Center, Philadelphia.

25—Choctaw Mfg. Co., Silas, Ala. $1,410,185. 706,860 pairs of white trousers. Defense Personnel Support Center, Philadelphia.

26—The following contracts were awarded for JP-4 fuel by the Defense Fuel Supply Center, Washington, D.C.: Debco Corp., Abilene, Tex. $4,587,300. 50,255,000 gals.; Shamrock Oil & Gas Corp., Amarillo, Tex. $4,022,860. 41,334,000 gals.; Golden Eagle Refining Co., Los Angeles. $3,843,152. 40,004,344 gals.; Rell Oil & Gas Co., Tulsa, Okla. $2,813,445. 34,650,000 gals.; Delta Refining Co., Memphis, Tenn. $2,245,528. 23,230,000 gals.; MacMillan Ring-Free Oil Co., Los Angeles. $2,194,912. 22,556,656 gals.; Sioux Oil Co., Newcastle, Wyo. $2,062,725. 17,500,000 gals.; Howell Refining Co., San Antonio, Tex. $1,683,754. 18,238,000 gals.; Northwestern Refining Co., St. Paul Park, Minn. $1,505,506. 15,980,000 gals.; Crystal Flash Petroleum Corp., Indianapolis, Ind. $1,198,582. 11,485,000 gals.; Tesoro Petroleum Corp., San Antonio, Tex. $1,176,090. 11,000,000 gals.

27—Northwestern Steel & Wire Co., Sterling, Ill. $1,464,700. 151,000 coils of concertina barbed wire. Defense Construction Supply Center, Columbus, Ohio.

—Lane Myers Co. Protection, Kan. $1,364,675. 161,560 coils of concertina barbed wire. Defense Construction Supply Center, Columbus, Ohio.

30—The following contracts were awarded for JP-4 fuel by the Defense Fuel Supply Center, Washington, D.C.: Humble Oil & Refining Co., Houston, Tex. $13,250,021. 158,147,000 gals.; Standard Oil Co. of Calif., San Francisco. $11,580,074. 118,024,600 gals.; Continental Oil Co., Houston, Tex. $11,284,194. 131,228,800 gals.; Sunray Oil Co., Tulsa, Okla. $8,361,339. 92,870,000 gals.; Union Oil Co. of Calif., Los Angeles. $8,176,591. 85,627,856 gals.; Socony Mobil Oil Co., New York City. $6,678,238. 70,055,000 gals.; Texaco, New York City. $6,206,759. 75,000,000 gals.; Cities Service Oil Co., New York City. $5,530,614. 67,000,000 gals.; Sinclair Refining Co., New York City. $5,310,100. 62,770,824 gals.; Tidewater Oil Co., Los Angeles. $3,648,960. 37,800,000 gals.; Ashland Oil & Refining Co., Ashland, Ky. $3,602,881. 37,120,225 gals.; Phillips Petroleum Co., Bartlesville, Okla. $3,140,544. 36,173,000 gals.; Douglas Oil Co. of Calif., Los Angeles. $3,053,600. 32,000,000 gals.; Suntide Refining Co., Tulsa, Okla. $2,769,926. 34,000,000 gals.; American Petrofina Co. of Tex., Dallas, Tex. $2,632,980. 29,000,000 gals.; American Oil Co., Chicago. $2,260,021. 23,630,000 gals.; Shell Oil Co., New York City. $1,629,860. 16,800,000 gals.; Triangle Refineries, Houston, Tex. $1,462,400. 16,000,000 gals.; Great Northern Oil Co., Minneapolis, Minn. $1,443,855. 15,000,000 gals.; Chevron Oil Co., El Paso, Tex. $1,254,080. 13,200,000 gals.; Standard Oil Co., Cleveland, Ohio. $1,215,600. 12,000,000 gals.; Hunt Oil Co., Dallas, Tex. $1,080,000. 12,500,000 gals.; Sun Oil Co., Philadelphia. $1,012,536. 10,080,000 gals.; Kerr-McGee Oil Industries, Oklahoma City. $1,006,860. 12,000,000 gals.

—Sportwelt Shoe Co., Nashua, N.H. $2,252,696. 350,000 pairs of black combat boots. Newport, N.H. Defense Personnel Support Center, Philadelphia.

—Safety First Shoe Co., Nashville, Tenn. $1,663,985. 256,110 pairs of black combat boots. Huntsville, Ala. Defense Personnel Support Center, Philadelphia.

ARMY

2—Brezina Construction Co., Inc., Rapid City, S.D. $2,213,284. Construction and excavation work at the Bowman-Haley Reservoir Project. Bowman, N.D. Engineer District, Omaha, Neb.

3—Remington Arms Co., Inc., Bridgeport, Conn. $1,553,123. Small arms ammunition. Independence, Mo. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—Weatherhead Co., Cleveland, Ohio. $2,945,372. Antitank projectiles. Cleveland. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

4—Western Electric Co., New York City. $9,975,000. Modification kits for HERCULES missiles. Burlington, N.C. Army Missile Command (AMC), Redstone Arsenal, Huntsville, Ala.

—A. O. Smith Corp., Chicago. $2,705,000. 750-pound bomb parts. Houston, Tex. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—Southwest Truck & Body Co., Inc., St. Louis. $1,744,326. Semi-trailer shop vans. West Plains, Mo. Army Tank Automotive Center (AMC), Warren, Mich.

5—Remington Arms Co., Inc., Bridgeport, Conn. $13,827,878. 30 caliber ammunition. Independence, Mo. Army Tank Automotive Center (AMC), Warren, Mich.

6—Holston Defense Corp., Rochester, N.Y. $5,942,288. Miscellaneous propellants and explosives. Kingsport, Tenn. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—General Electric Co., Burlington, Vt. $2,434,923. 7.62mm aircraft machine guns and pods. Production tooling and repair parts. Burlington. Army Weapons Command (AMC), Rock Island, Ill.

—Schiller-Pfeiffer Machine Works, Inc., Southampton, Pa. $2,000,000. Metal parts assemblies for 152mm cartridges. Picatinny Arsenal (AMC), Dover, N.J.

—Honeywell, Inc., Hopkins, Minn. $1,191,799. Ordnance items. New Brighton, Minn. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—AVCO Corp., Richmond, Ind. $1,179,193. Ordnance items. Richmond. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

9—Hercules Powder Co., Wilmington, Del. $2,443,844. Miscellaneous explosives and loading of missile motors. Radford, Va. Army Tank Automotive Center (AMC), Warren, Mich.

—Ling-Temco-Vought, Warren, Mich. $1,947,000. LANCE missile items. Warren. Army Missile Plant, Warren, Mich.

—Remington Arms Co., Bridgeport, Conn. $6,804,210. .30 caliber ammunition. Independence, Mo. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

10—General Electric Co., Syracuse, N.Y. $1,082,254. 13 trailer-mounted electric power plants. Syracuse. Engineer Research & Development Laboratories, Fort Belvoir, Va.

—Markwell & Hartz, Inc., Memphis, Tenn. $1,653,025. Construction work on Pine Creek Reservoir, Little River Project. McCurtain County, Okla. Engineer District, Tulsa, Okla.

—Ryan Inc. of Wisconsin, Janesville, Wis. $1,597,400. Construction work on Pike Island Lock and Dam, Ohio River Project. Near Wheeling, W. Va. Engineer District, Pittsburgh, Pa.

—Amron Corp., Waukesha, Wis. $1,463,851. 20mm cartridge component. Frankford Arsenal (AMC), Philadelphia.

11—Raytheon Co., Lexington, Mass. $5,168,000. Maintenance of guided and control sections for Hawk Missile Systems. Bedford, Mass. Army Missile Command (AMC), Huntsville, Ala.

—Erickson Paving Co., Bellvue, Wash. $1,412,941. Construction work on Foster Reservoir, South Santiam River Project. Linn County, Ore. Engineer District, Portland, Ore.

12—Clement Bros. Co., Hickory, N.C. $5,335,718. Construction on the Green River Dam and Reservoir. Campbellsville, Ky. Engineer District, Louisville, Ky.

—Boeing Company, Morton, Pa. $13,948,723, $1,220,840 and $2,815,860. Repair parts for support of CH-47 Chinook Helicopters. Aviation Command (AMC), St. Louis.

—Goodyear Tire & Rubber Co., Akron, Ohio. $1,327,802. M113 vehicle parts. St. Mary's, Ohio. Army Tank Automotive Center (AMC), Warren, Mich.

—Union Carbide Corp., New York City. $1,639,603. Batteries for tactical radio sets. Chemway, N.C. Army Electronics Command, Philadelphia.

13—Teletype Corp., Skokie, Ill. $1,500,000. Electronics Equipment. Electronics Command (AMC), Fort Monmouth, N.J.

—Boeing Co., Morton, Pa. 3,091,058 and $1,342,113. Repair parts for CH-47 Chinook Helicopters. Army Aviation Command (AMC), St. Louis.

—**RCA,** Camden, N.J. $4,909,515. Radio equipment. Army Electronics Command (AMC), Philadelphia.

—**Model Engineering & Manufacturing Corp.,** Huntington, Ind. $6,837,321. Radio equipment. Huntington and/or Salt Lake City, Utah. Army Electronics Command (AMC), Philadelphia.

—**Chandler Evans, Inc.,** West Hartford, Conn. $1,801,597. Turbine fuel controls and governor assemblies for UH-1 helicopters. Aviation Materiel Command (AMC), St. Louis.

—**McCarthy Bros. Construction Co.,** St. Louis. $2,119,940. Construction on the Mississippi River at St. Louis. Engineer District, St. Louis.

3—**Ryan Aeronautical Co.,** San Diego, Calif. $1,090,000. Design and development of 500 lb. precision drop glider systems. San Diego and Yuma, Ariz. Army Aviation Laboratories, Fort Eustis, Va.

3—**Philco Corp.,** Newport Beach, Calif. $1,224,800. Industrial engineering services for the SHILLELAGH missile. Newport Beach. Los Angeles Procurement District (AMC), Pasadena, Calif.

—**Stewart Warner Corp.,** Indianapolis, Ind. $1,331,894. Bomb parts. Indianapolis. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

0—**Boeing Co.,** Seattle, Wash. $2,000,000. Research and development services on HIBEX program. Seattle. San Francisco Procurement Div. (AMC), Oakland, Calif.

—**Fruehauf Corp.,** Detroit. $1,284,674. XM674 semi-trailers. Delphos, Ohio. Army Tank Automotive Center (AMC), Warren, Mich.

—**Hercules Powder Co.,** Wilmington, Del. $1,000,000. Maintenance and support services. Sunflower Army Ammunition Plant, Lawrence, Kan. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

0—**White Motor Co.,** Lansing, Mich. $4,202,563. 2½ ton trucks. Army Mobility Command (AMC), Warren, Mich.

—**Case Master Body, Inc.,** Rose City, Mich. $3,190,911. 400-gallon water tank trailers. Rose City. Army Tank Automotive Center (AMC), Warren, Mich.

8—**Chrysler Motors,** Detroit. $3,078,816. One-ton cargo trucks (M601). Warren, Mich. Army Mobility Command (AMC), Warren, Mich.

—**Raytheon Co.,** Lexington, Mass. $1,250,000. Selected items of ground support equipment for the HAWK missile system. Waltham and Andover, Mass. Army Missile Command (AMC), Huntsville, Ala.

—**Associated Builders, Inc.,** Cleveland, Ohio. $1,048,500. Roofing and insulation work at the Cleveland Tank Plant. Engineer District, Louisville, Ky.

—**General Motors,** Detroit. $2,242,000. Engine development for the U.S./Federal Republic of Germany main battle tank. Detroit and Warren, Mich. Army Tank Automotive Center (AMC), Warren, Mich.

—**Fegles Construction Co.,** Minneapolis. $2,000,000. Construction of facilities to dispose of waste red water from explosive production operations. Joliet, Ill. Engineer District, Chicago.

—**AVCO Corp.,** Richmond, Ind. $1,560,628. Adapter boosters and metal parts (M126A1). Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

5—**Colt's Inc.,** Hartford, Conn. $4,182,304. M-16 rifles for the Air Force and Coast Guard. Army Weapons Command, (AMC), Rock Island, Ill.

—**Number One Contracting Corporation of Delaware,** West Pittston, Pa. $2,062,326. Work on Blanchard Reservoir Project. Near Lock Haven, Pa. Engineer District, Baltimore.

6—**Bowen-McLaughlin-York, Inc.,** York, Pa. $11,083,784. Eight-inch howitzers (M110) and recovery vehicles. York. Army Tank Automotive Center (AMC), Warren, Mich.

—**Bristol Electronics,** New Bedford, Mass. $4,321,810. Radio sets and receiver-transmitters. New Bedford. Army Electronics Command (AMC), Philadelphia.

—**Sperry Rand Corp.,** New York City. $6,448,941. Ammunition. Shreveport, La. Ammunition and Procurement Agency (AMC), Joliet, Ill.

27—**Peter Kiewit Sons,** Richmond, Calif. $1,798,160. Work on Half Moon Bay project, San Francisco. Engineer District, San Francisco.

—**A. S. Schulman Electric Co.,** Los Angeles. $1,108,931. Work on Green Peter Reservoir Project. Near Foster, Ore. Engineer District, Portland, Ore.

—**Newport News Shipbuilding and Drydock Co.,** Newport News, Va. $1,631,780. Work on Carters Dam on the Coosawattee River, Georgia, Project. Engineer District, Mobile, Ala.

—**Grumman Aircraft Engineering Corp.,** Bethpage, N.Y. $1,400,000. Modernization of OV-1C MOHAWK aircraft. Stuart, Fla. and Bethpage. Army Aviation Command (AMC), St. Louis, Mo.

—**California Electric Mfg. & Service Co.,** Wilmington, Calif. $1,328,490. ¼-ton cargo trailers. Army Tank Automotive Center (AMC), Warren, Mich.

—**Highway Products, Inc.,** Kent, Ohio. $1,448,960. HAWK guided missile launchers. Army Missile Command (AMC), Redstone Arsenal, Huntsville, Ala.

—**Kanarr Corp.,** Kingston, Pa. $1,221,110. M-79 grenade launchers. Army Weapons Command (AMC), Rock Island, Ill.

—**Goodyear Tire & Rubber Co.,** Akron, Ohio. $1,633,200. 10,000-gallon collapsible tank assemblies. Rockmart, Ga. Army Mobility Equipment Center (AMC), St. Louis.

—**Collins Radio Co.,** Richardson, Tex. $2,295,000. Radio terminal sets. Army Electronics Command (AMC), Philadelphia.

30—**Dynalectron Corp.,** Washington, D.C. $4,542,538. Installation, operation and maintenance of government owned data collection facilities at the White Sands Missile Range. Missile Range Headquarters, White Sands, N.M.

—**Hol Gar Mfg. Co.,** Primos, Pa. $1,104,720 and $1,052,142. 3,055 generator sets (1½ KW, 60 cycle) and 2,573 generator sets (1½ KW, 28 volts). Army Mobility Command (AMC), St. Louis.

—**Packard Bell Electronics Corp.,** Newbury Park, Calif. $1,551,416. Transponder test sets. Procurement District (AMC), Los Angeles.

—**Pathman Construction Co.,** Chicago. $4,030,500. Construction of 250 family housing units at Fort Sheridan, Ill. Engineer District, Chicago.

—**Bristol Electronics Corp.,** New Bedford, Mass. $1,095,949. Radio amplifiers. Army Electronics Command (AMC), Philadelphia.

—**Chromcraft Corp.,** St. Louis. $1,203,058. 2.75 airborne rocket launchers. Ammunition Procurement & Supply Center (AMC), Joliet, Ill.

31—**U.S. Rubber Co.,** New York City. $5,900,834. Reactivation and maintenance activities at the Army Ammunition Plant, Joliet, Ill. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—**Magnavox Co.,** Fort Wayne, Ind. $1,119,366. Radio receivers and receiver-transmitters. Urbana, Ill. and Fort Wayne. Army Electronics Command (AMC), Philadelphia.

—**Thompson-Ramo-Wooldridge,** Cleveland, Ohio. $2,282,458. Grenade launchers. Rock Island Arsenal (AMC), Rock Island, Ill.

—**Olin Mathieson Chemical Corp.,** Lexington, Ky. $4,574,574. 155mm ammunition and operation and maintenance activities. Army Ammunition Plant, Charlestown, Ind. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Dynamics Corp. of America,** Bridgeport, Conn. $2,841,450. 10 KW, 60-cycle generator sets. Army Mobility Equipment Center (AMC), St. Louis.

—**Green Construction Co. of Indiana,** Oaktown, Ind. $1,188,686. Work on Wabash River Basin Project, Princeton, Ind. Engineer District, Louisville, Ky.

—**Sperry-Phoenix Co.,** Phoenix, Ariz. $2,020,002. Electronic Control amplifiers and radio indicators. Los Angeles Procurement District (AMC), Pasadena, Calif.

—**Honeywell, Inc.,** Hopkins, Minn. $2,382,065. Ammunition components. New Brighton, Minn. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Institute for Defense Analyses,** Arlington, Va. $1,690,000. Evaluation and operational analyses by issuance of task orders. Defense Supply Service, Washington, D.C.

—**Dynamics Corp. of America,** Bridgeport, Conn. $9,852,479. Generator sets. Army Mobility Equipment Center (AMC), St. Louis.

—**Bell & Howell Co.,** Chicago. $1,836,436. Ordnance items. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

NAVY

2—**Lockheed Missiles and Space Co.,** Sunnyvale, Calif. $23,597,250. Engineering program associated with POLARIS A-3 missile. Sunnyvale. Special Projects Office.

3—**United Aircraft Corp.,** East Hartford, Conn. $1,281,089. Spare parts for J-52, J-57 and J-48 jet aircraft engines. East Hartford. Navy Aviation Supply Office, Philadelphia.

—**Varian Associates,** Palo Alto, Calif. $1,532,425. Procurement and installation of a microwave linear accelerator at the National Naval Medical Center, Bethesda, Md. Bureau of Yards and Docks.

—**General Electric,** Washington, D.C. $4,846,237. Modifications to the MK-84 fire control system. Pittsfield, Mass. Special Projects Office.

—**American Mfg. Co. of Texas,** Fort Worth, Tex. $1,464,487. 5-inch caliber projectiles. Fort Worth. Navy Ships Parts Control Center, Mechanicsburg, Pa.

4—**Lockheed Missiles & Space Co.,** Sunnyvale, Calif. $9,000,000. Classified services in connection with POLARIS missile program. Sunnyvale. Special Projects Office.

5—**Lockheed Missiles & Space Co.,** Sunnyvale, Calif. $88,318,048. Manufacture of POLARIS A-3 missiles. Sacramento, Calif.; Bacchus, Utah; and Sunnyvale. Special Projects Office.

—**Cortelyou & Cole, Inc. and City Electric, Inc.,** Mountain View, Calif. $1,027,000. Construction of an electrical distribution system and operation building extension. Skaggs Island, Calif. Director, Western Division, Bureau of Yards & Docks.

—**United States Steel Corp.,** Pittsburgh. $7,042,000. Bomb bodies. McKeesport, Pa. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—**American Machine & Foundry Corp.,** York, Pa. $1,929,915. Mortars. York. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—**Verdel Construction Co.,** Baltimore, Md. $1,268,150. Construction of WAVE barracks and conversion of boilers in bldg. #502. Naval Training Center, Bainbridge, Md. Director, Atlantic Division, Bureau of Yards & Docks.

6—**E. C. Ernest, Inc.,** Norfolk, Va. $2,296,863. Extension of pier utilities. Naval Station, Norfolk. Director, Atlantic Division, Bureau of Yards & Docks.

—**Bell Aerospace Corp.,** Buffalo, N.Y. $2,065,618. Navy managed portion of the tri-service VTOL aircraft program. Wheatfield, N.Y. Bureau of Naval Weapons.

—**Aerojet General Corp.,** Azusa, Calif. $3,389,939. MK 46 torpedoes. Bureau of Naval Weapons.

9—**Interstate Electronics Corp.,** Anaheim, Calif. $2,272,419. Instrumentation associated with POLARIS weapons system. Anaheim. Special Project Office.

—**Boeing Co.,** Morton, Pa. $11,871,164. Dynamic parts for CH-46A helicopters. Morton. Navy Aviation Supply Office, Philadelphia.

—**American Machine & Foundry Corp.,** York, Pa. $2,013,862. Liquid propellant rocket engines. Navy Purchasing Office, Washington, D.C.

11—**Kaiser Aluminum Chemical Sales,** Oakland, Calif. $4,003,791. Aluminum airfield matting extrusions. Halethorpe, Md. Navy Aviation Supply Office, Philadelphia.

—**Amron Corp.,** Waukesha, Wis. $2,444,709. 20mm steel cartridge cases. Navy Ship's Parts Control Center, Mechanicsburg, Pa.

—**Dow Metal Products,** Midland, Mich. $5,487,713. Aluminum airfield matting extrusions. Madison, Ill. Navy Aviation Supply Office, Philadelphia, Pa.

—**Harvey Aluminum,** Torrance, Calif. $3,432,960. Airfield landing mat and pallet assemblies. Navy Aviation Supply Office, Philadelphia.

—**Curtiss-Wright,** Wood-Ridge, N.J. $3,151,911. Spare parts for engines used in various aircraft. Navy Aviation Supply Office, Philadelphia.

—**Emerson Electric,** St. Louis. $1,332,305. Indicator groups for use in T3A aircraft. Mt. Pleasant, Iowa and St. Louis. Navy Aviation Supply Office, Philadelphia.

—Aluminum Co. of America, Pittsburgh. $2,986,560. Aluminum airfield matting extrusions. Lafayette, Ind. Navy Aviation Supply Office, Philadelphia.

—Sperry Rand Corp., Univac Div., St. Paul, Minn. $1,899,850. Computers and associated equipment for installation aboard ships. Bureau of Ships.

—S. S. Mullen, Inc., Seattle, Wash. $2,841,086. Erection of 260 USAHOMES (prefabricated homes) and site preparation for 90 USAHOMES. Naval Station, Kodiak, Alaska. Director, Northwest Div., Bureau of Yards and Docks.

12—Chromcraft Corp., St. Louis. $5,191,711. MIGHTY MOUSE rocket launchers for the Air Force. St. Louis. Bureau of Naval Weapons.

—Litton Systems, Beverly Hills, Calif. $15,326,863. Navigational systems for A6A and E2A aircraft. Woodland Hills, Calif. Navy Aviation Supply Office, Philadelphia.

—General Electric, Cincinnati. $1,988,321. Spare part kits in support of jet engines for F4B aircraft. Navy Aviation Supply Office, Philadelphia.

—Sikorsky Aircraft, Stratford, Conn. $1,901,484. Gear box assemblies for CH-3C helicopters. Navy Aviation Supply Office, Philadelphia.

—Curtiss-Wright, Wood-Ridge, N.J. $1,003,327. Spare part kits for aircraft engines. Navy Aviation Supply Office, Philadelphia.

13—United Aircraft, East Hartford, Conn. $23,067,200. TF-30 engines for the Air Force. Bureau of Naval Weapons.

—United Aircraft Corp., Norwalk, Conn. $5,592,131. Spare parts for radar sets for A6A aircraft. Navy Aviation Supply Office, Philadelphia.

—Kaiser Air, Space & Electronics Corp., Palo Alto, Calif. $1,000,000. Spare parts for the data display system used in the A6A aircraft. Navy Aviation Supply Office, Philadelphia.

—Sperry Rand Corp., St. Paul, Minn. $2,710,240. Computer digital data sets, associated equipment and engineering services, for installation of Naval Tactical Data System equipment on naval ships and at shore stations. Bureau of Ships.

—McDonnell Aircraft Corp., St. Louis. $1,000,000. Classified weapon system development and program definition studies. Bureau of Naval Weapons.

16—PRD Electronics, Inc., Westbury, L.I., N.Y. $1,098,000. FY 1966 installment funding for R&D on VAST (versatile avionics shop test equipment) program. Bureau of Naval Weapons.

—Sanders Associates, Inc., Nashua, N.H. $3,165,000. Classified electronics equipment. Bureau of Naval Weapons.

17—T.M.C. Systems Inc., Alexandria, Va. $1,451,381. Air transportable communication units for Navy shore based radio stations. Alexandria. Navy Purchasing Office, Washington, D.C.

—AVCO Corp., Richmond, Ind. $4,252,764. POLARIS arming and fuzing devices. Richmond. Special Project Office.

18—R. M. Wells Co., Quanah, Tex. $1,977,285. Rehabilitation of Wherry Housing at Naval Training Center, Bainbridge, Md. Director, Atlantic Div., Bureau of Yards and Docks.

23—Sewart Seacraft, Berwick, La. $4,841,218. Construction and delivery of SWIFT boats and spare engines. Berwick. Bureau of Ships.

—H. H. Robertson Co., Connersville, Ind. $1,115,431. Prefabrication of personnel facility structures for Operation DEEP FREEZE. Bureau of Yards and Docks.

—General Motors, Indianapolis, Ind. $4,033,421. Spare parts for aircraft engines for E-2A, C-130 and P3A aircraft. Indianapolis. Aviation Supply Office, Philadelphia.

24—Aerojet General Corp., Azusa, Calif. $60,698,094. MK 46 torpedoes and related equipment. Bureau of Naval Weapons.

25—Goodyear Tire and Rubber Co., Akron, Ohio. $1,379,408. Aircraft tires. Navy Aviation Supply Office, Philadelphia.

—Canadian Commercial Corp., Montreal, Quebec, Canada. $1,408,620. Crankcase assemblies for aircraft engines. Navy Aviation Supply Office, Philadelphia.

—Litton Systems, Inc., Beverly Hills, Calif. $2,000,000. Special support equipment for inertial navigation systems for P-3A aircraft. Woodland Hills, Calif. Navy Aviation Supply Office, Philadelphia.

—United Aircraft, E. Hartford, Conn. $4,252,356. Jet aircraft engines. Navy Aviation Supply Office, Philadelphia.

—United Aircraft, E. Hartford, Conn. $7,355,043. Miscellaneous spare parts for jet aircraft engines. Navy Aviation Supply Office, Philadelphia.

—United Aircraft, E. Hartford, Conn. $1,820,769. Propeller assemblies for use on P-3A aircraft. Windsor Locks, Conn. Navy Aviation Supply Office, Philadelphia.

—Harvell-Kilgore Corp., Toone, Tenn. $6,474,840. Parachute flares. Navy Ships Parts Control Center, Mechanicsburg, Pa.

26—United Aircraft, E. Hartford, Conn. $3,257,240. TF-30 engines for the Air Force. Bureau of Naval Weapons.

—Lockheed Aircraft, Watchung, N.J. $1,950,000. FY 66 funding for the MK 86 lightweight gun fire control system. Bureau of Naval Weapons.

—North American Aviation, Columbus, Ohio. $2,000,000. Shipboard integrated operational intelligence center. Bureau of Naval Weapons.

—J. W. Bateson Construction Co., Dallas, Tex. $4,679,000. Construction of 150 family housing units for Navy enlisted men and 150 family units for Air Force enlisted men at Bolling AFB, Washington, D.C. Director, Chesapeake Div. Bureau of Yards and Docks.

—Bethlehem Steel Corp., Baltimore, Md. $1,687,738. Reactivation of the USNS General Nelson M. Walker (T-AP-125). Commander, Military Sea Transportation Service, Atlantic Area.

—Todd Shipyards, Los Angeles. $1,733,728. Reactivation of the USNS General William Weigel (T-AP-119). San Pedro, Calif. Commander Military Sea Transportation Service, Pacific Area.

—Todd Shipyards, San Francisco. $1,653,228. Reactivation of the USNS General John Pope (T-AP-110). Alameda, Calif. Commander, Military Sea Transportation Service, Pacific Area.

27—Westinghouse Electric, Pittsburgh, Pa. $20,923,369. Research and development in nuclear propulsion plants for Navy ships. Pittsburgh. Bureau of Ships.

—General Electric, Schenectady, N.Y. $10,476,000. Research and development in nuclear propulsion plants for Navy ships. Schenectady. Bureau of Ships.

—Kaman Aircraft, Bloomfield, Conn. $2,771,016. Rotor blades for UH-2A/B helicopters. Navy Aviation Supply Office, Philadelphia.

30—United Aircraft, Windsor Locks, Conn. $2,900,500. Repair parts for propellers for P-3A aircraft. Navy Aviation Supply Center, Philadelphia.

—General Electric, Pittsfield, Mass. $1,145,003. Manufacture of POLARIS guidance test sets. Special Projects Office.

—General Precision, Inc., Glendale, Calif. $1,300,000. Modifications to the fire control system for MK 48 torpedoes. Bureau of Naval Weapons.

31—Ryan Aeronautical Co., San Diego, Calif. $2,550,000. Production of FIREBEE target drones. San Diego. Bureau of Naval Weapons.

AIR FORCE

2—Burtek, Inc., Tulsa, Okla. $2,026,840. Instrument flight trainers. Tulsa. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Martin-Marietta, Baltimore. $3,494,000. Design, development, fabrication and flight testing of a maneuverable re-entry vehicle (Project START). Baltimore. Space Systems Div. (AFSC), Los Angeles.

3—M.I.T., Cambridge, Mass. $24,793,000. Research and development of advanced electronic programs including space communications. Lexington, Mass. Electronics Systems Div. (AFSC), L. G. Hanscom Field, Mass.

—Sylvania Electric Products, Mountain View, Calif. $3,251,701. Spare parts for electronic data processing equipment. Mountain View. Warner-Robins Air Materiel Area (AFSC), Robins AFB, Ga.

—General Motors, Milwaukee, Wis. $2,500,000. Work on an inertial guidance system. Milwaukee. Space Systems Div. (AFSC), Los Angeles.

—Federal Pacific Electric, Newark, N.J. $1,796,000. Fabrication of electrical switching gear. Newark. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—Lear Siegler, Inc., Grand Rapids, Mich. $1,350,606. Procurement of aircraft gyroscope assemblies and power amplifiers. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

4—Thompson Ramo Woolridge Inc., Redondo Beach, Calif. $10,800,000 and $8,396,830. FY 66 MINUTEMAN development support services and non-development support services. Norton AFB, Calif. Ballistic Systems Div. (AFSC), Los Angeles.

—Boeing Co., Seattle, Wash. $4,462,000. Development, test and engineering for modernization of Wings I through V of the MINUTEMAN weapon system. Seattle. Ballistic Systems Div. (AFSC), Los Angeles.

—Dow Chemical Co., Midland, Mich. $1,137,091. Production of ordnance. Torrance, Calif. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Calif.

—Lear Siegler, Inc., Santa Monica, Calif. $1,291,540. Scientific study in support of missile range safety. Santa Monica. Air Force Western Test Range (AFSC), Vandenberg AFB, Calif.

—Thompson Ramo Woolridge, Inc., Redondo Beach, Calif. $2,000,000. Work on space-ground communications. Redondo Beach. Space Systems Div. (AFSC), Los Angeles.

—General Electric, Arkansas City, Kan. $2,359,300. Overhaul and modification of J-85 engines. Arkansas City. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—Colt Industries, Pratt & Whitney, Inc., Cudahy, Calif. $3,610,942. Production of machine tools. Cudahy. Aeronautical Systems Div. (AFSC), Wright-Paterson AFB, Ohio.

—New Britain Machine Co., Cleveland. $1,081,868. Production of machine tools. Cleveland. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Giddings & Lewis Machine Tool Co., Fond du Lac, Wis. $2,109,275. Production of machine tools. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Kearney & Trecker Corp., Milwaukee, Wis. $2,324,000. Production of machine tools. Milwaukee. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

5—Lockheed Aircraft, Ontario, Calif. $2,160,826. Modification of C-133 aircraft. Ontario. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—Stearns-Roger Corp., Denver. $1,008,414. Rocket engine propellants. West Palm Beach, Fla. Middletown Air Materiel Area (AFLC), Olmsted AFB, Pa.

6—Lockheed Aircraft Service Co., Jamaica, N. Y. $1,702,000 Overhaul and routine maintenance of the special air mission (SAM) fleet. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

9—Aerojet-General Corp., Sacramento, Calif. $3,593,000. TITAN II propulsion systems. Sacramento. San Bernardino Air Materiel Area (AFLC), Norton AFB, Calif.

—Hazeltine Corp., Little Neck, N. Y. $1,826,000. Production of communications equipment. Little Neck. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

10—Univac, Sperry Rand, Corp., Washington, D. C. $6,705,610. Electronic data processing systems. Philadelphia. 2750th Air Base Wing (AFLC), Wright-Patterson AFB, Ohio.

—Lockheed Aircraft, Burbank, Calif. $1,437,600. Maintenance of instrumentation and equipment for collection of high altitude clear air turbulence data. Systems Engineering Group (AFSC), Wright-Patterson AFB, Ohio.

—Hughes Aircraft, Culver City, Calif. $6,150,000. Modification of MINUTEMAN missile test equipment. Culver City. Middletown Air Materiel Area (AFLC), Olmstead AFB, Pa.

—Hughes Aircraft, Culver City, Calif. $4,800,000. Flight test program for the F-4E aircraft. Culver City. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Boeing Co., Morton, Pa. $22,000,000. Production of CH-47A helicopters and related ground equipment. Morton. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

11—Avco Corp., Stratford, Conn. $3,000,000. Production of T-55 series aircraft engines. Stratford. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

12—Boeing Co., Wichita, Kan. $4,900,468. FY 66 B-52 Fleet Support Program. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

13—**M.I.T.**, Cambridge, Mass. $1,260,000. Procurement of a development model—stabilized navigation system. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Philco Corp.**, Fort Washington, Pa. $1,020,387. Operation of the precision measurements equipment laboratory at Vandenberg AFB, Calif. Air Force Western Test Range (AFSC), Vandenberg AFB, Calif.

16—**Textron, Inc.**, Grants Pass, Ore. $2,066,096. Ejector racks for F-4C aircraft. Grants Pass. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

17—**Kearney & Trecker Corp.**, Milwaukee, Wis. $1,923,783. Production of machine tools and related equipment. Milwaukee. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Sundstrand Corp.**, Belvidere, Ill. $1,982,079. Production of machine tools and related equipment. Belvidere. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

18—**Aerodex, Inc.**, Miami, Fla. $3,390,468. Overhaul of R-4360 engines. Sacramento Air Materiel Area, McClellan AFB, Calif.

—**General Electric**, Philadelphia. $1,494,000. Flight testing of the Maneuvering Ballistic Re-entry Vehicle. Philadelphia. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Convair**, San Diego, Calif. $1,000,000. Production of ATLAS/AGENA boosters. San Diego. Space Systems Div. (AFSC), Los Angeles.

19—**General Electric**, Cincinnati. $88,273,000. Procurement of J79-GE-15 turbojet engines for F-4 and RF-4 aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**General Electric**, Cincinnati. $2,034,600. Modification kits and spare parts for J-79 engines. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

20—**Hughes Aircraft Co.**, Culver City, Calif. $2,603,500. Engineering services for test and evaluation of the F-102 and F-106 aircraft. Holloman AFB, N. M. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

—**Martin-Marietta**, Baltimore, Md. $1,050,730. Modification of B-57 aircraft. Middle River, Md. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—**B. F. Goodrich**, Akron, Ohio. $1,026,112. Production of B-52 aircraft tires. Akron. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

23—**United Aircraft**, Windsor Locks, Conn. $3,445,237. Modification of B-52 engine starters and related equipment. Windsor Locks. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

24—**Cardion Electronics**, Westbury, N. Y. $1,178,350. Procurement of radar sets. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Mass.

—**General Electric**, West Lynn, Mass. $4,324,868. Procurement of T-58 engines. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Southwest Airmotive Co.**, Dallas, Tex. $1,130,091. Overhaul of J-47 engines and components. Dallas. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—**Hayes International Corp.**, Birmingham, Ala. $1,700,000. Procurement of aircraft fuel tanks. Aeronautical Systems Div. (AFLC), Wright-Patterson AFB, Ohio.

—**North American Aviation**, Los Angeles. $1,000,000. Technical services and parts (repair and replacement), in support of the X-15 research aircraft program. Los Angeles. Aeronautical Systems Div. (AFLC), Wright-Patterson AFB, Ohio.

25—**Boeing Co.**, Seattle, Wash. $9,041,144. Fabrication, assembly checkout and test of MINUTEMAN equipment. Seattle. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**General Motors**, Milwaukee, Wis. $1,433,900. Work on TITAN II missile guidance system. Oak Creek, Wis. Middletown Air Materiel Area (AFLC), Olmsted AFB, Pa.

26—**Hughes Aircraft**, Culver City, Calif. $22,952,523. Modification of FALCON missiles. Tucson, Ariz. Middletown Air Materiel Area (AFLC), Olmsted AFB, Pa.

—**American Bosch Arma Corp.**, Garden City, N. Y. $1,241,000. Work on advanced ballistic re-entry system program. Garden City. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Westinghouse Electric**, Baltimore, Md. $5,945,707. Production of low frequency communications sets. Baltimore. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Mass.

27—**North American Aviation**, Columbus, Ohio. $2,520,596. Modification of T-28 aircraft. Columbus. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—**Bendix Corp.**, South Bend, Ind. $1,101,000. F-101 landing gear assemblies. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

30—**Magnavox Co.**, Fort Wayne, Ind. $1,227,000. Procurement of communications equipment for C-141 aircraft. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—**Dallas Airmotive, Inc.**, Dallas, Tex. $2,090,458. Overhaul of R-2800 engines. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

—**North American Aviation**, Los Angeles. $1,750,000. Test work on the F-100 aircraft. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—**General Electric**, West Lynn, Mass. $3,300,000. Production of J-85 engines. West Lynn. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**International Telephone & Telegraph Corp.**, Paramus, N. J. $1,164,500. Engineering services and material in support of the Strategic Air Command Control System. Paramus and Offutt AFB, Neb. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Mass.

31—**Standard Mfg. Co.**, Dallas, Tex. $2,142,000. Production of munitions handling trucks. Dallas. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

—**I.B.M.**, Rockville, Md. $2,290,076. Engineering research to develop improved computer programming techniques. Omaha, Neb. and Washington, D. C. Rome Air Development Center (AFSC), Griffiss AFB, N. Y.

Industrial Security Management Courses Offered To Contractor REPS

Industrial Security Management Courses for contractor representatives will be given in October at the Boston and Dallas Defense Contract Administration Services (DCAS) Regions. A requirement for enrollment is a current security clearance of Confidential or higher.

The courses are presented by the instructor staff from the U. S. Army Intelligence School, Fort Holabird, Baltimore, Md., and are periodically scheduled at various locations in the United States as a service to contractors. These courses are field extensions of the resident courses presented at Fort Holabird.

The course in Boston will be presented October 18–22 at the Hotel Madison, North Station, Boston, Mass. To enroll or request more information, contact the Chief, Office of Industrial Security, DCAS Region, Boston, 666 Summer Street, Boston, Mass. 02210, telephone: (Area Code 617) LIberty 2–6000, Ext. 809.

The course in Dallas will be presented October 25–29 at the Ramada Inn, 6900 Cedar Springs Road, Dallas, Tex., located near the entrance to Love Field. To enroll or request more information, contact the Chief, Office of Industrial Security, DCAS Region, Dallas, 500 S. Ervay Street, Dallas, Tex. 75201, telephone: (Area Code 214) RIverside 9–2039 or RIverside 9–3589.

Atlantic-Pacific Interoceanic Canal Study Commission Appointed

A study of the engineering feasibility of various routes and methods of construction of a sea-level canal connecting the Atlantic and Pacific Oceans is being planned by a special five-man commission appointed by the President.

The group, called the Atlantic-Pacific Interoceanic Canal Study Commission, has requested that the Secretary of the Army appoint the Chief of Engineers, Army Corps of Engineers, as its agent for conducting the study.

The Army Engineers will develop, in coordination with the AEC, the Panama Canal Company, and other agencies, a plan for collecting and evaluating the necessary geologic, hydrologic and other scientific data in Panama and other countries. This information will be used by the Commission to determine the most feasible location for the canal, the best method of construction and the cost of the project.

After review and approval of the plan by the Commission, the Chief of Engineers will supervise the execution of the plan.

Members of the Commission are former Secretary of the Treasury Robert B. Anderson as Chairman, Dean Robert Storey as Vice Chairman, Dr. Milton Eisenhower, Mr. Raymond Hill and Mr. Kenneth Fields, former General Manager of AEC.

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Hawaii Gov. Burns Calls Conference on Oceanography and Astronautics

Governor John A. Burns of Hawaii has called a Conference on Oceanography and Astronautics to be held Sept. 29 to Oct. 2 at the Kauai Surf Hotel.

Purpose of the conference will be to evaluate the nation's oceanographic and space programs within the context of recent developments in these fields, including the selection of Hawaii as the primary site for the Mohole Project.

Governor Burns said the meeting is an extension of the Conference on Science and Technology held last January in Maui. The forthcoming conference will be more concentrated and specialized with executives, scientists and technicians in the fields of oceanics and space attending. Vice Admiral John T. Hayward, Commander, Anti-Submarine Warfare Force, Pacific, is conference chairman.

Among those invited to address the conference are Jacques Cousteau, internationally famous undersea explorer; Dr. William Pickering of California Institute of Technology's Jet Propulsion Lab; General Bernard A. Schriever, Commander, Air Force Systems Command; Dr. Gordon Lill, Director of Project Mohole for the National Science Foundation; Dr. Hugh Dryden, Deputy Administrator and chief scientist of NASA; and Dr. James H. Wakelin, president of the Scientific Engineering Institute and former Assistant Secretary of the Navy for Research and Development. Dr. Wakelin was the former chairman of the Interagency Committee on Oceanography.

The conference is being held on the island of Kauai to give some 300 conferees an opportunity to inspect the multi-million dollar underwater electronic test range installation and supporting facilities for anti-submarine warfare research under construction off the island. These facilities will become part of the Pacific Missile Range complex at Barking Sands, Kauai, and will be near the Kokee Park Station, a key facility for America's manned space flights.

Plans call for a program of two and a half days with afternoon tours of the test range site and aero-space facilities on the island and formal addresses in the mornings. Six papers will be presented in the field of oceanics on Sept. 30, and six more in the fields of astrophysics and space on Oct. 1. The conference will close Oct. 2, with a summary panel session under the chairmanship of Admiral Hayward.

Registration for the conference will be conducted Sept. 29.

Construction Begins on Nuclear Reactor Facility

Senator Joseph D. Tydings (D.-Md.) and Representative Clarence D. Long (D.-Hartford County, Md.) were the principal speakers at ground breaking ceremonies Aug. 16 officially opening a $3.5 million "fast pulse" nuclear reactor facility construction program at the Aberdeen Proving Grounds, Md.

The facility is being constructed by the Security Construction Co. Inc., of Richmond, Va., and is expected to be completed in 18 months, becoming operational in 1967.

The nuclear reactor will be patterned after the Oak Ridge National Laboratory for health physics research. It will be operated by the Ballistic Research Laboratories (BRL), under the direction of Dr. Hubart P. Yockey.

Upon completion, the facility will be used by military organizations and industrial contractors for research in the fields of high intensity radiation and testing. It will be one of seven sites located in the United States.

Colonel Charles D. Y. Ostrom, Jr., Commanding Officer, U.S. Army Ballistic Research Laboratories (BRC), was master of ceremonies at the ground breaking rites.

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Development and Production of the C-5A Aircraft Approved

Artist's Conception of the Lockheed Version of the C-5A.

Lockheed Aircraft Corporation has been selected as the prime contractor on the C-5A program. Approval to proceed with the development and production of this revolutionary new transport plane was announced by the Secretary of Defense on Sept. 30, 1965. (See story on page 1.)

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BULLETIN

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Material in the *BULLETIN* is selected to supply pertinent unclassified data of interest to the business community. Suggestions from industry representatives for topics to be covered in future issues should be forwarded to the Buainess & Labor Division.

The *BULLETIN* is distributed each month to the agenciea of Department of Defense, Army, Navy, and Air Force, and to representatives of industry. Request for copies should be addressed to the Business & Labor Division, OASD/PA, Room 2E818, The Pentagon, Washington, D.C. 20301, telephone, OXford 5–2709.

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California Tops Prime Contract List for FY 1965

California received the largest dollar volume of military prime contract awards in Fiscal Year 1965 with a total of over $5.0 billion. New York was second with over $2.2 billion. Others in the top ten include Texas, Connecticut, Massachusetts, Missouri, Pennsylvania, Ohio, New Jersey and Georgia.

California and New York were also first and second respectively in Fiscal Year 1964. Georgia is the only new state in the 1965 top ten, replacing Washington which was in sixth place in Fiscal Year 1964. Six of the top 10 form a compact area in the northeast, namely Massachusetts, Connecticut, New York, New Jersey, Pennsylvania and Ohio. The other four are widely scattered—California in the far west, Texas in the southwest, Missouri in the midwest and Georgia in the south.

A detailed tabulation of Defense Department prime contract awards by State up to June 1965 is given in three tables beginning on page 22 of this issue. The tables cover the following:

Table 1—Net Value of Military Procurement Actions, Fiscal Years 1964 and 1964.

Table 2—Net Value of Military Procurement Actions by Department, July 1964–June 1965.

Table 3—Net Value of Military Procurement Actions by Fiscal Year: Fiscal Years 1964, 1964 and 1965.

NIKE-X Contract Awarded

The U.S. Army has awarded a $221,216,696 contract to the Western Electric Company for continued development and testing of the NIKE-X missile defense system.

The cost-plus-incentive fee contract will cover work on the system from Oct. 1, 1965 to Sept. 30, 1966. Western Electric Company is the NIKE-X prime contractor.

NIKE-X is being developed as a defense against intercontinental ballistic missiles and submarine launched missiles. It is the only anti-missile system in advanced development by the United States and is a high priority Department of Defense research and development project.

Funds will be divided among several thousand firms which furnish goods and services for the NIKE-X development program. These firms are located in nearly every state of the Union.

Western Electric Company has major plants in Burlington, Greensboro and Winston-Salem, N.C., as well as in Lauredale and Allentown, Pa., with field offices at the test site.

Bell Telephone Laboratories is responsible for design and development of the system, with work centered at Whippany, N.J., and at the test sites.

The principle NIKE-X subcontractors and their locations are: Burroughs Corp., Plainfield, N.J., display system; Control Data Corp., Minneapolis, Minn., computer effort; Cornell Aeronautical Laboratories, Buffalo, N.Y., discrimination studies; Douglas Aircraft Co., Inc., Santa Monica, Calif., ZEUS missile airframe and engineering services; General Electric Co., Syracuse, N.Y., radar techniques and signal processing equipment; Martin-Marietta Corp., Orlando, Fla., SPRINT missile airframe and engineering services; Hercules Powder Co., Cumberland, Md., SPRINT propulsion; Raytheon Co., Wavland, Bedford and Andover, Mass., missile site radar and multi-function array radar development; and Sperry-Rand UNIVAC Div., St. Paul, Minn., data processing equipment.

Development and Production of C-5A Aircraft Approved

Secretary of Defense McNamara has directed the Air Force to proceed immediately to develop and produce a revolutionary new transport plane—the C–5A.

Lockheed Aircraft Corporation has been selected by the Air Force to develop and produce the C–5A. The four new fan jet engines for the aircraft, each capable of 40,000 pounds of thrust, are being developed and will be produced by the General Electric Company.

The development cost and the initial production order for 58 planes, including engines, will be about $2 billion. The aircraft will be bought under a new contracting concept under which both the airframe and engine manufacturers will receive contracts covering not only development but also production. This far-reaching step should assure that this complex program will be carried out at the least possible cost.[1]

Weighing nearly 350 tons, twice that of our largest military cargo plane, this giant new aircraft will be able to carry loads of a quarter million pounds 3,200 miles and loads of 100,000 pounds non-stop across the Pacific Ocean. It will be more than 230 feet long, 63 feet high at the tail and have a 220-foot wing span.

The C–5A will be able to land on unprepared airfields of 4,000 feet, thus permitting flights directly from the United States to points of crisis anywhere in the world. It will carry almost any piece of military equipment including tanks, trucks and helicopters. Sixteen three-quarter ton trucks or two M–60 main battle tanks will be transported in a single plane.

Ten C–5A's could have handled the entire Berlin Airlift, which required more than 140 C–54's. During Exercise BIG LIFT in 1963, 204 transport planes making 234 flights airlifted 15,000 troops to Europe in 63 hours. Forty-two C–5A's could do the same job in only 13 hours.

This new plane, which will greatly improve our military capabilities, also will enable the United States to speed to the needy in time of crisis or disaster. During last year's food crisis in Pakistan, for example, C–130 aircraft made 76 flights over a 10-day period to deliver 952 tons of food. Seven C–5A's could do this in 18 hours.

The commercial implications of the C–5A are also significant. It could carry international air cargoes at a much lower cost per mile than present commercial planes.

One of the major objectives of the present Administration, and President Kennedy's Administration, has been to increase the mobility and reaction time of our military forces by providing more airlift. Since 1961 we have increased this capability by one hundred per cent. When the C–5A becomes operational in 1969, our airlift capability will be more than five times that of 1961. By 1972, it will be ten times what it was in 1961.

The Military Air Transport Service will then be able to move more people and heavier equipment over greater distances faster than ever before. The C–5A will give our defense team —with its other land, sea and air logistics systems—the means to respond more quickly, effectively and economically to a wide range of crises.

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[1] See article, "Effective Competition—A Key to Government Procurement," on page 8.

Civilians to Replace Military in Non-Combatant Jobs

A major new program has been established by the Department of Defense to speed up and to reduce the cost of the nation's military buildup. Large numbers of military personnel, now in non-combatant, support type assignments, will be replaced by civilians.

The initial phase of this far-reaching program calls for hiring 60,000 civilians during 1966 to do cilivian type jobs now being done by military personnel. This will free some 75,000 officers and enlisted men for duties which must be performed by military personnel. The 15,000 difference represents manpower savings made possible by substituting "long-tenure" civilians for military personnel whose tours of duty are of short duration.

In announcing the program, the Secretary of Defense said that it would enable the Defense Department to make more effective use of national manpower resources. "This program," the Secretary said, "will not only permit acceleration of our buildup of military manpower, it will enable us to decrease the number of draftees otherwise required. It will also allow a considerable reduction in the number of military people who will have their tours of duty extended involuntarily."

Support type positions where civilians can substitute for military personnel include administrative and clerical, supply and maintenance, medical, food service and transportation. Although some overseas positions are involved, by far the larger number will be within the continental United States.

A Manpower Utilization Board will oversee the initial phase of the program and develop plans for extending it beyond 1966. It will be headed by the Assistant Secretary of Defense (Manpower) and include the Under Secretaries of the Army, Navy and Air Force.

The Secretary emphasized that the new program is in keeping with President Johnson's desires that, in the present crisis, all military personnel should be assigned to duties for which there is a direct military requirement and that there should be no waste or misapplication of America's manpower.

DSA Seeks New Suppliers

A new system has been established by the Defense Supply Agency (DSA) to encourage more firms in labor surplus areas to bid for Defense contracts.

Called Project SONS (Seek Out New Suppliers), the system calls for the listing of all procurements in excess of $100,000 of which no more than two bids were received or no bids were received from firms in labor surplus areas.

The project has resulted in placement of additional contracts in labor surplus areas and has brought substantial savings to the Government through increased competition.

Firms interested in competing for the procurement of the items listed below should write to the Economic Utilization Specialists at the DSA Supply Center indicated. A code letter has been designated for each Center and the letter appearing after each item listed indicates the DSA Center which has primary interest.

Code Letter	DSA Supply Center
C	Mr. Ralph Sager Defense Construction Supply Center Columbus, Ohio 43215
E	Mr. B. L. Castle Defense Electronics Supply Center Dayton, Ohio 45401
F	Mr. K. Melvin Skaggs Defense Fuel Supply Center 801 19th St., N. W. Washington, D. C. 20305
G	Mr. Reed Randolph Defense General Supply Center Richmond, Va. 23219
I	Mr. Sidney Charles Defense Industrial Supply Center 700 Robbins Ave. Philadelphia, Pa. 19111
P	Mr. David Hoffman (Clothing & Textiles) Mr. Peter M. Babich (Medical) Mr. James L. Calvert (Subsistence) Defense Personnel Support Center 2800 S. 20th St. Philadelphia, Pa. 19101

List of Items	Code Letter
B&W Aerial Photographic Film, Nonperforated, MIL-F-32C	G
Electron Tubes, Types 6299, 6Y6GT, 7077, 7289, and 2K25	E
Sewing Machine, Industrial, FSN 3530-753-2874	G
Jam, #2½ size cans and 2 lb jars, Various FSNs	P
Boot, Combat, Tropical, DMS, MR, MIL-B-43154	P
Shoe, Safety, Neoprene Cork Sole, MR, MIL-S-41821	P
Tent Section, Frame Type, Cotton Duck, FMW&WR, OD, w/cover end assembly and intermediate assembly.	P
Shoe, Dress, Man's Oxford, Leather, Black IP/DES S-111-S	P
Refrigerator, Self Contained, Mechanical Commercial FSN 4110-194-1572.	G
Handcuffs	P
Sleeping Bag, Aircrew Survival, MC-1	P
Paper, Map, FSN 9310-274-3842	G
Allylbarbituric Acid Tablets, FSN 6505-962-4375	P
Shoe, Service, Man's, Water Resistant, Class I, Outersoles, 8-Eyelets, MIL-S-21804A (Navy) dtd 22 Jul 63.	P
Boxes Fiberboard, FSN 8970-677-4613	P
Cans and Lids, FSN 8970-677-4613	P
Cattlehide, Wet, Salted for FTWR, Upper Leather, Type II, Class I, IP/DES-S-80-1 dtd 24 Mar 64.	P
Shoe, Dress, Man's, Oxford, Leather, Black, MIL-S-0013192D	P
Cheese Spread, Cheddar, FSN 8910-082-6761, 87 gram cans	P
Film, Photographic, Chemicals and Paper, Photographic MIPR R/65/016090-888NSF, FSN 6750 series.	G
Table, Operating, Hospital, Pedestal, Stock No. 6530-709-9005 Spec. MIL-T-001-6951B(IM) dtd 3 Oct 63.	P
Heater, Space, Size 2, w/air circulating fan, MIL Spec No. MIL-H-14516A, DTD 8 May 58.	C
Sirup, Imitation, Maple, FSN 8925-682-6705, 6706, 6708 #10 size can, #2¼ size can, 1 lb 6 oz & pint bottle.	P
Boot, Combat, Service, Mildew Resistant, (MIL-5), Type I	P
Jellies, Fruit, FSN Various, #2¼ size cans and 2 lb jars	P
Shortening Compound, FSN 8945-125-6338 and 8945-256-1314 5½ lb can and 5 gallon can.	P
Cargo Flyaway Bins, FSN 7125-682-5287	G
Glasses, Sun, Men's, Spectacle Type	P
Barbed Wire, Concertina, Mil Spec MIL-C-320, FSN 5660-371-9494.	C
Ice Making Machine, Cube, Automatic, electrical characteristics, 230 volts, 60 cycles, 1 phase AC, FSN 4110-837-6442.	G
Paper, Newsprint, cut sheets, size 32" x 42"	P
Surgeons' Disposable Rubber Gloves	P
Camouflaged Muslin Bandages, Various Sizes	P
Disposable Paper Cups for Specimens	P
Plastic Urine Collection Bags	P
Fronts and Temples for Spectacles	P
Bag, Water Sterilizing, Mil Spec MIL-B-273, FSN 4160	C
Pump, Dispenser, Hand Driven, Mil Spec MIL-D-43095, FSN 4830-276-0087.	C
Pipe, Bituminized Fiber, Fed Spec Fed-SS-P-366, FSN 5630, various sizes.	C
Insulation Board, Thermal, Fibrous Glass, Mil Spec MIL-I-742, FSN 5640.	C
Roofing Felt, Fed Spec Fed-SS-R-501, FSN 5650	C
Roofing Felt, Asphalt, Fed Spec Fed-HH-F-191, FSN 5650	C
Canteen Cup, Steel Corrosion Resistant	P
Poncho	P
Bed Sheeting	P
Potatoes, White, Instant, Granules, #10 size can, FSN-8915-164-6876.	P
Chicken, Canned, Boned, 5¾ oz can, FSN 8905-129-0823	P
Ham & Eggs, Chopped, 5½ oz can, FSN 8940-160-6815	P
Ham & Lima Beans, 11¼ oz can, FSN 8940-127-9650	P
Pork Steak, 5½ oz can, FSN 8905-132-6729	P
Beans, w/Frankfurters, 11½ oz can, FSN 8940-838-8273	P
Ham, Sliced & Fried, 5½ oz can, FSN 8905-170-8240	P
Beefsteak, 5½ oz can, FSN 8905-170-8244	P
Beef, Sliced w/Sauce, 5½ oz can, FSN 8905-641-8960	P
Beef Slices & Potatoes, w/Gravy, 11½ oz can, FSN 8940-281-3049.	P
Pre-fried Bacon	P
Applesauce, Instant	P
Post, Fence, Metal, FSN 5660-262-9914 and 5660-270-1510	C
Cotton Bedspread, Single, FSN 7210-753-2900	P
Cotton Hand Towels, White, 17" wide - 30" long, huck weave.	P
X-Ray Apparatus, Photofluorographic, FSN 6525-823-8058	P
Metal Buttons, Insignia, 25 line size and 30 line size	P
Saliva Ejectors, Dental, Plastic	P
Dressing, First Aid, Stock No. 6510-201-7455	P
Diesel Powered Fork Lift Truck	G
Electric Fork Lift Truck	G
Aircraft, Cockpit, Lights	G
Conduit, Rigid Metal FSN 5973-228-0052	
Mattress, Bed, Foam Rubber Padding, Spec MIL-M-18351C (Ships).	P
Potatoes, Sweet, Canned	P
Bandage, Cotton, Elastic, 3 inches by 5½ yards	P
Blueberries, Canned, Water Pack, No. 10 Cans	P
Urinals, Vitreous China, FSN 4510, BuShps Dwg 1885868	C
Insulation, Thermal, Pipe Covering, FSN 5640, MIL-I-2781	C
Pump, Centrifugal, 20,000 GPH, FSN 4320, MIL-P-17861	C
Posts, Fence, Steel, FSN 5660, MIL-P-20636	C
Flour, FSN 8920-680-2040 and 8920-125-9423	P
Lavatories, Assembled, FSN 4510, Fed Spec WW-P-541	C
Desalter Kits, Type II, FSN 4610, MIL-D-5531	C
Belts, 'V", Auto, FSN 3030, MIL-B-11040	C
Cutting Edges, Angle & Dozer Blades, FSN 3830, MIL Standard 39103-39104.	C
Fittings, Lubrication (Various Types), FSN 4730, MIL-F-3541.	C
Sprayer, Insecticide, FSN 3740, MIL-S-52185	C
Padlock, Combination, Mil Spec MIL-P-17257B	I
Electron Tube, Klystron, Types 2K45 and 2K48	E
Electron Tube, Magtron, Types 2J50 and 2J51A	E
Electron Tube, Transmitting, Types 8X2500A3 and 4CX1000A	E
Apron, X-Ray, Protective	P
Sheath, Machete, Plastic	P
Coat and Trousers, Heat Protective, Safety	P
Crown, Support, Cap	P
Handkerchiefs	P
Overcoat, Wool, Man's	P
Sweater, Men's and Women's	P
Trousers, Men's, Wool, Blue, Melton	P
Swim Trunks	P
Uniform, Women's, Wool and Cotton	P
Pork Sausage, Canned, Links, FSN 8905-889-3756	P
Luncheon Meat, Canned, FSN 8905-126-4020	P
Beef, w/gravy, FSN 8905-582-1384	P

Effective Competition
A Key to Government Procurement

by

Robert H. Charles

Assistant Secretary of the Air Force

(Installations and Logistics)

Government procurement practice can be interpreted as the relationship between the Government and industry, in its broadest sense. About half of the entire $50 billion Defense program and over 80 per cent of the $5 billion NASA program is represented and therefore deeply influenced by that relationship.

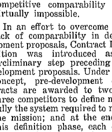
Competition, coupled with incentives, has been the bedrock of our successful enterprise system. If one were to try to sum it up in a few words it might be said that: where there is competition, there might be failure; and it is this risk of failure that causes a man or an organization to rise to the peak of his skill. Our mental heartbeat is stimulated by the adrenalin of competition.

In spite of this, however, only a small fraction of our work is awarded on a competitive basis. And the necessary inference from these two facts—competition produces better results, and we have little competition—is one that will be unpalatable to most industry representatives, namely that defense industry is not operating at the peak of its talents.

And when I speak of competition as a spur to rising to the heights, I am not talking strictly about price competition. Low price is only a part and, in many cases, only a small part of what we want. What kind of a price tag do you put on the area rule?

Competitive bidding at one time was limited to the earliest phase in the acquisition of a new system. Because of the high cost of development and production, a single contractor was selected as early as possible to do the initial research and development including much of what we now call Contract Definition; and in carrying out this R&D work, the contractor built up such a store of technical knowledge about this specific system that he became the only practicable source for further work. Meaningful competition in terms of responsible commitment concerning performance, schedule, or price was minimal because, before selecting the contractor, the system was so ill-defined that competitive comparability was virtually impossible.

In an effort to overcome this lack of comparability in development proposals, Contract Definition was introduced as a preliminary step preceding development proposals. Under this concept, pre-development contracts are awarded to two or three competitors to define more fully the system required to meet the mission; and at the end of this definition phase, each contractor submits a performance and price proposal for development of the system. Since these proposals are based on a greater degree of refinement and clarity in the Work Statement, they are more comparable and competition is more effective.



Assistant Secretary of the Air Force (Installations & Logistics) Robert H. Charles is responsible for the formulation and supervision of Air Force policies and programs pertaining to weapons systems, production, procurement, supply, maintenance, transportation and communications.

Even so, the role of competition is severely limited if it stops at this point and applies only to development, because the follow-on production, which is awarded without competition, can represent up to 85 per cent of the total program. This situation explains why only a small portion of the total awards of the Air Force are let competitively.

And so, in an attempt to make a quantum jump, we are now testing a plan under which the Contract Definition contractors will bid, not only on the development, but also on the production and a large portion of the support such as Aerospace Ground Equipment (AGE), spares, etc., in one package.

The total package concept is based on the premise that if we can define with reasonable accuracy what a system is to do, and if the major technological building blocks of that system are in hand, we can obtain competitive commitments concerning the performances and prices of what we really want, i.e., operational equipment. This will avoid the "Chinese auction" of the conventional system under which competitors for development contracts are tempted (if not in fact forced in order to be "competitive") to make irresponsibly low "buy in" bids, the extent of such irresponsibility varying with each competitor's estimate of the volume of changes or of subsequent production; and, of course, this salesmanship often includes overestimates of performance. Requiring performance and price commitments for production units, rather than meaningless and often misleading planning estimates, should reduce performance disappointments, budget disruptions, fund reallocations, program stretch-outs and possible program cancellations.

Further, under the "total package" plan, the winning contractor, having committed himself to cost and performance figures for production units before detailed design begins, will be motivated from the outset of the development effort to design for economical production, for production reliability and for simplicity of maintenance, all of which are direct functions of initial design.

Of equal importance with competition is that the companies in this industry not be exposed to company-crippling losses and that, if efficient, they be permitted to earn the kind of profit needed to obtain the capital, personnel and facilities and to perform the independent research and development which are essential to making a continuing contribution to our national goals. In view of the risks inherent in total package procurement, a contractual framework carefully tailored to these risks is required. But the results will be well worth the effort. We will thereby reduce the waste and sterility that walk hand in hand with non-competitive contracts, and at the same time we will provide adequate rewards for jobs that are well done.

As many of you know, we are testing this concept on the C-5A. This program was selected because it did not represent such great advances in the current technology that the risks could not be reflected in the contractual arrangements. Although there is no proof yet whether this concept will work, we have now been working with it long enough to be optimistic; and I expect it will be extended to other programs. For example, we intend to apply it to SRAM, and it is possible that it may be applied to the Mark XVII re-entry vehicle.

Price Competition Awards Increased Four Per Cent During FY 1965

Use of price competition by the Defense Department increased by more than four per cent during FY 1965 over FY 1964. This use accounted for a new high of 43.4 per cent of the dollar value of military prime contract awards during FY 1965, compared to 39.1 per cent for the previous fiscal year.

This increase was especially notable for Navy and Air Force, with the Army increasing by a smaller amount and the Defense Supply Agency showing a decrease. The comparative figures are given in the table below.

Percentage of Prime Contract Awards
as a Result of Price Competition

	FY 1964	FY 1965
Army	51.8%	52.8%
Navy	36.7	41.7
Air Force	21.2	25.2
Defense Supply Agency	91.5	90.3
All Departments	39.1%	42.3%

One of the problems in this approach is that in order to be able to bid intelligently on a system for which the building blocks are in hand but which has not yet been developed or tested as an integrated unit, much more work must be done during Contract Definition. This means more expense, and someone has to pay for it. The Air Force tries to pick up the tab on the ground that the maintenance of competition throughout the definition phase is worth more than its cost—and I for one am convinced that this is so. But the truth is that the companies in the competition, knowing how important it is to win, spend much more than what is provided for them.

A second problem is the length of time it takes to pick a winner after all the proposals are in. During this period the competitors are holding their teams together, agai great cost, and this serves a useful purpose only for ultimate winner.

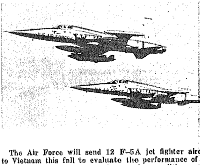
Are we asking, in connection with incentive fixed- proposals, for too much detail with respect to cost, an breakdown as between fiscal years, by function an component? Are we asking for too much detailed de rather than specifying requirements in terms of perf ance, and then permitting the winning competito achieve that performance in his own way?

There are undoubtedly many other problems which new approach will bring to the surface, but based on we know so far, it appears to be sound.

A question which may arise is how can an appr which is all right for relatively straightforward sys intended for extensive production be appropriate for systems which involve so many unknowns and so repetitive production? One answer is that as we pro down the road in our space programs, we will find here, too, we will get to the point where many of things we want will not seriously stretch the then of the art, or that the stretching can be limited to cific components and that the balance of a program ca subjected to the total package concept.

Technical creativity and flexibility should not hampered by contractual arrangements which are ar at competitively and which impose meaningful resp bility on the contractor. On the contrary, they shoul stimulated thereby.

F-5A Freedom Fighter to be Evaluated in Vietnam



The Air Force will send 12 F-5A jet fighter airc to Vietnam this fall to evaluate the performance of new multi-purpose plane under combat conditions.

This light-weight, supersonic aircraft, built by Northrop Corporation, has been provided by the Def Department to some allies under the Military Assist Program. It can carry 0,200 pounds of bombs, roc air-to-air missiles, or other ordnance. It has two 20- limeter cannons mounted in its nose and can take fully loaded from unpaved runways in combat are

The F-5A's will be flown in Vietnam by pilots of 4503rd Tactical Fighter Squadron and will be accompa by an Air Force evaluation team which will obtain formation to be used in developing tactical air conc procedures, tactics and techniques for the employ of these fighters in combat.

Munitions Export Control and Security Policy Administration

by
Joseph J. Liebling
Assistant for Security to the
Deputy Chief of Staff, Systems & Logistics, USAF
and the
Deputy Chief of Staff, Research & Development, USAF

It is interesting to recognize the perspective and reaction of individuals, whether they be in Government or industry, regarding what is meant by national or military security. To avoid philosophy, several years ago at a national regional meeting of one of our trade associations, the president of a major defense industry corporation, speaking about the challenge we faced in the international export market, made the following comment in closing out his talk:

> "The United States Government must come to understand the character and degree of the competition facing us this minute, and to appreciate the full extent of America's interest in the outcome. It also is vital to us as an industry. Our foreign sales often mean the difference between a healthy industry and a sick one, and what could be of more critical concern to our national defense posture?
>
> "We need to see our Government not only giving its positive support but removing immediately such unnatural handicaps as have hindered us even when the competition was straightforward. Heading this list, of course, are unreasonable and illogical security restrictions which serve no purpose but to deny us and our Government from winning some really worthwhile victories in the Cold War."

Perhaps a trifle critical and emotional remark but significant enough for notice.

At subsequent regional meetings of other national trade associations and carried through to the present date, during which time the world is experiencing several active rather than cold wars, the subjects of security policies, munitions exports and strategic material trade controls are being widely discussed as having a strong impact on the ability of American industry to compete more favorably in world trade. In fact, as late as September 2, 1965, a Congressman talking before the House of Representatives, proposed that Congress re-establish a House Select Committe on Export Control in view of the interrelationship between the Mutual Defense Assistance Act, Trading with the Enemy Act, Export Control Act, etc.

American industry has indicated its official position to the Government through its trade associations on these many occasions, seeking better clarification of national and military security policy considerations to facilitate the ability of industry to fulfill, in cooperation with the governments, the stated objectives of the current export program which became declared national policy by the Trade Export Expansion Act of 1962.

On February 20, 1965, the Department of Defense issued DOD Directive 5030.28, Subject: "Munitions Control Procedures for U. S. Munitions List Export License Applications Referred to the Department of Defense by the Department of State." It contains a specific statement of DOD policy consistent with overall national policy and the security interests of the U. S.—i.e., "to promote and encourage the export abroad of U. S. military material and services and related technical data to include advanced technological information to allied and friendly nations." The three Military Departments, Army, Navy and Air Force, were delegated authority for the implementation of this policy and for the munitions export license control program in cases referred for action by the Department of State.

The present export program calls for expansion of trade in the military products and related technology areas. National policy, therefore, dictates a more flexible weighing of factors, taking into consideration security, military, political and defense industries' economic interests. It is a most significant responsibility and represents a revision of viewpoint on the part of the Government security review officials in terms of the U. S. balance of payment problem and military and national economic objectives. To fully support the program, the Military Departments are required to provide their coordinated departmental position on munitions cases to the Director of the Office of Munitions Control, Department of State, or to the Assistant Secretary of Defense (International Security Affairs), taking into consideration the following factors:

- Identification of material or data and end use.
- Security aspects, security policy interests and/or implications, including the current security classification, if any, of the item involved.
- Military advantage or detriment to the United States and impact on U. S. Government national policy for region, area, or country. Consistency with force goal objectives, military plans and operational requirements.
- Copyright, patent and/or proprietary rights involved and the United States interest therein.
- Impact on Military Assistance Program, sales, or requests and on coordinated weapons, co-development and co-production.
- Impact on DOD research and development, production, procurement and supply for United States Armed Forces, including whether use of United States Government-owned tooling or industrial facilities are involved.
- Significance of the specific item proposed for export in relation to the latest state of the art or advanced technology in that particular category of item. Relationship of proposed export to technological developments or programs in the country of destination.
- Legal considerations, i.e., compliance with Armed Services Procurement Regulation and International Traffic in Arms Regulation.

Technical mastery of applying national and military security factors within the Military Departments in the international export trade market has no black and white solution. U. S. prestige is enhanced greatly through

Mr. Joseph J. Liebling, Assistant for Security to both the Deputy Chief of Staff, Systems & Logistics, USAF, and the Deputy Chief of Staff, Research & Development, USAF, is the director for Air Force technical program security policy matters. In addition, he represents the Office of the Secretary of Defense as Chairman of the Working Group on Munitions Export Control and Security Policy of the Military Export Committee,Defense Industry Advisory Council.

the image of American superior technology and standardization of U. S. products must continue. Permit me to quote from an article by Arthur K. Watson titled, "Businessmen and Interdependence," in the 1963–1964 issue of the *Atlantic Community Quarterly*:

> "There is a need for internationalizing products of American design. The time is past when the domestic market so far overshadows the foreign market that we can create products without regard to overseas buyers. If we are going to get the long production runs we need for foreign competition we must start at the drawing board and build world acceptance into the product."

One needs only to review the titles of articles which appeared about a month ago in a Washington, D. C., newspaper to anticipate the complexity of the judgments required to implement Government commitments of equipment, technology and materials involved in a company proposal:

- "International Lab on Moon is Pushed at Space Parley."
- "U. S. Trade Unit Going to Poland and Rumania."
- "Soviet Trade Reciprocity."

The impact of Government considerations and participation in such proposals would seem obvious since we are talking in terms of exchanging advanced technology, in the first instance for peaceful uses in international space programming and in the latter two for economic reasons to ease East-West tension. In order to avoid straying far afield from the responsibilities inherent in the Military Departments to implement the aforementioned DOD directive, primarily concerned with munitions exports, we have to confine our comments to what is required of us in the Defense Department in our relations with the Department of State, the agency charged with the issuance of the International Traffic in Arms Regulation, and to highlight certain requirements of industrial corporations to assist the Government in its judgment during the processing of a munitions case.

As we have all recognized, probably the most significant subject of interest is the requirement to develop detailed policies and guidance for both industry and Government agencies as to what equipment, data and advanced technology is releasable or non-releasable for national or military security reasons. Obviously, the most attractive potentiality for sales or commitments by U. S. corporations is the field of advanced technology and research and development products. It is also in this area that we are dealing with the most sensitive type of information to be considered for release, both classified and unclassified. We are dealing with judgment factors within the responsible Military Departments and the Department of Defense and these judgments have variations along similar lines from a national security viewpoint analagous to the extent we must go to establish a balanced equation on the one hand in increasing production of military arms for national defense efforts while, at the same time, exerting sincere and extensive effort on the other side to achieve disarmament in the interest of world peace. In other words, how far can we go in the research and development spectrum in terms of net advantage to the U. S., vis-a-vis the foreign government and its industry, weighing all the factors, political, military and economic?

In discharging the task assigned to the Working Group on Munitions Export Control and Security Policy by Mr. Henry Kuss, Chairman, Committee on Military Exports, Defense Industry Advisory Council, last April, we reviewed procedures in detail affecting the munitions export control program and security policy administration relating thereto. In addition, we are currently reviewing the impact of the implementation of the provision of the new International Traffic in Arms Regulation (included in Federal Register, Volume 30, Number 137, July 17, 1965, Part II) by industrial facilities and with Government agencies. The following are certain practices and procedures which our Working Group feels need current and future attention by appropriate industry and Government people if we are to effectively continue to enjoy the joint progress made so far in export trade expansion:

- We understand that, in certain cases, companies and the Government have been experiencing additional time delay in processing because the Department of State has not been receiving sufficient information for a industry to adequately identify which Military Department would have the prime interest in the data involved or which agency is the user since there is no contract for the product or technology involved. We find this difficult to understand since data or an item of equipment normally has some purpose of operation, i.e., shipboard use, use by land forces, or in aircraft and, in some instances, multipurpose uses, etc. The companies must identify the technology or equipment more readily for the Government as required by the International Traffic in Arms Regulation:

> "Technology or equipment not under contract considered of advanced design, process, or technique should include a statement as to whether the equipment or technology involved was derived, produced or developed for any U. S. Government agency or military service for bidding or other purposes."

If this information is not sufficient, then a purpose or use of the equipment or technology should be submitted. The Department of State will then process the munitions case to the cognizant Military Department or user agency.

- Since the issuance of DOD Directive 5030.28, experience has indicated that some consideration be given to improving the administrative procedures for processing munitions cases between the Department of State and the Department of Defense agencies. We have suggested that an office be established within the Office of the Secretary of Defense which would serve as the final action agent or DOD control and reflect the consolidated position to the Department of State. A copy of all final State Department actions would be forwarded to the Assistant Secretary of Defense (International Security Affairs) and disseminated as necessary to the Office of the Director of Defense Research and Engineering and the militor of Defense Research and Engineering and the Military Services. Such action and U. S. Government position of similar equipments and data.

- We recognize the need for clear policy guidance for industry and Government officials to assist in planning and decision making in those cases where contractors are proposing the release of technology pertaining to guidance, computers, gyros, propulsion systems, space satellite information, supersonic transport, etc. We are concerned with hardware and data under contract and that technology not under contract, but which has foreign exchange or export potential.

- Additional guidance will be provided in the implementation of the new International Traffic in Arms Regulation concerning (a) definition and application of technical data; (b) the public release of information and its relationship to export exemptions; (3) clarification of export control requirements for data and technology developed as a result of official visits, whether classified or unclassified, to industrial facilities by foreign nationals; and (d) simple interpretations with regard to exemptions permitted in cases which began as government-to-government negotiations and follow-up participation by companies.

- We feel there may be a need for some form of interdepartmental committee for better coordination among all Government agencies. In addition, a clear definition of authority and responsibility of each agency, where ultimately proposals by contractors involve potentially exportable equipment, data, or entering into licensing agreements, should be established. For example, the Federal Aviation Agency has prime interest in supersonic transport data releases, the National Aeronautics and Space Administration has prime responsibility for civilian space programs, the Department of Commerce for strategic materials, etc. Many cases must be submitted to two or more agencies for coordination and each is not using similar criteria for determination of releasability.

- Since the last meeting of the Working Group in April and the issuance of the DOD Industrial Security Manual

(*Continued on Page 25*)

Deep Ocean Engineering

by
William F. Burkart
Technical Director, U.S. Naval Civil Engineering Laboratory, Port Hueneme, California

Since the days of the cave man one of the principles of warfare has been "take the high ground." In the Navy there is an obverse corollary to this rule: "Go deeper."

During the last few years the Navy has been "going deeper" at an increasing rate. It is virtually certain that underwater structures of types never before constructed will be needed for military purposes, and probably also for commercial purposes as man learns more about how to gather the riches of the sea.

The ocean engineering chapter in the composite "Book of Engineering Knowledge" is now a small one. The Navy's Bureau of Yards and Docks (BuDocks), however, is in the process—literally—of expanding that chapter.

The Naval Civil Engineering Laboratory (NCEL) at Port Hueneme, Calif., is the spearhead of the Navy's drive to learn more about undersea structures. Although it is most difficult to predict the *form* and *function* of future structures, knowledge applicable to the building of all such ocean structures—including soil mechanics, materials behavior, means of communication and means of site evaluation—can be developed to permit design and use of appropriate structures when they are finally required.

The principal BuDocks areas of investigation are: foundation design, materials of construction and construction techniques.

Foundation Design.

In the work related to foundation design, it is necessary to learn how to use the ocean sediments as we do terrestrial soils. BuDocks is concerned with predicting their bearing values, their stability, their response to loading—rather than with such characteristics as their age or rate of deposition. Since these factors may influence the engineering properties of ocean soils, we are interested in them, but they do not constitute our main concern as we rely on oceanographers to investigate them.

The NCEL has performed soil analyses both for its own purposes and for the Navy Oceanographic Office. To date, several hundred samples have been analysed for their physical properties, as standardized in the soil mechanics field. NCEL is cataloging this information and examining it to determine whether or not a gross estimate of soil behavior can be made for a particular site on the basis of its geographic location, topography and soil type.

A considerable effort is being assigned to the study of the properties of sediments. It is important that we learn more, for example, about shear strength of sediments. To study the shear strength of very soft sediments, NCEL built a sensitive, recording, vane-shear device. It measures the shear strength of ocean sediments whose failure stress is about 0.3 PSI, whereas terrestial clays may fail at about 3.0 PSI.

Commercially available devices were not sufficiently sensitive for measurements of this type; therefore, NCEL had to design and build a shearing device.

NCEL is now developing a soil sampling device which will reduce the cost of sampling at sea, since samples can be obtained more rapidly, thus conserving ship time. The soil sampler has two components: an expendable section which remains on the sea floor and a retrievable section which is brought to the surface by a float.

The sampler is driven into the bottom by the weight when released by a tripping device. Simultaneously, the float is released. The corer is driven into the bottom where the outer tube and weight remain. The sample liner is withdrawn and taken to the surface by the float.

The entire apparatus is free-falling, unattached to the ship. Thus, a number can be released in a day's run. Since they will fall very nearly vertically, the sample location is fairly well determined. The sample has worked well in early shallow water tests. The cost of the expendable portion is estimated at $20.

In addition to studies in the realm of soil mechanics, we have been studying concepts of anchorages and foundation designs. An anchorage in this case means a system for holding a structure in a desired position, either floating at the surface suspended from the ocean floor or resting on the ocean floor.

The first concept to be investigated is called a "padlock anchor." It is a device which will provide a fixed point on the ocean floor to which a structure can be attached. NCEL has built an experimental model which weighs 8,000 pounds. It is structurally overdesigned to allow for the uncertainties of development and will be lighter in a final design. The three supporting pads of this anchor, which rest on the bottom, are five feet square. Cylinders above the pads contain propellant-driven anchors. The anchors are attached by wire lines to drums driven by a battery-powered motor and contained in the central cylindrical support. By that means, the anchors can be pulled taut. The padlock anchor would be placed in position, the explosive anchors fixed and the anchors drawn taut.

The anchor assembly then would be ready to receive the structure or the structure may have been attached in advance.

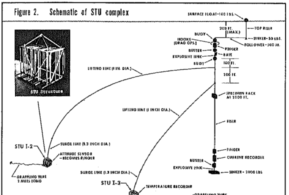


Figure 2. Schematic of STU complex

SURFACE FLOAT-100 LBS.
TOP RISER
200 FT. (MAX.)
BUOY
SINKER-50 LBS.
HOOKS (DRAG OPS.)
FOLLOWER-500 FT.
PINGER
BUSTER
BAIT
EXPLOSIVE LINK
BUOY
100 FT.
200 FT.
LIFTING LINE (1 IN. DIA.)
STU Structure
SPECIMEN RACK AT 2000 FT.
LIFTING LINE (1 INCH DIA.)
RISER
STU I-2
SURGE LINE (1.3 INCH DIA.)
ATTITUDE SENSOR -BECOMES PINGER
GRAPPLING WIRE 2 MILES LONG
PINGER
CURRENT RECORDER
BUSTER
EXPLOSIVE LINK
SINKER - 2000 LBS
SURGE LINE (1.3 INCH DIA.)
STU I-3
TEMPERATURE RECORDER
ALL LINES EXCEPT SURGE LINE ARE BLACK BRAIDED POLYPROPYLENE 1 INCH DIA.
ATTITUDE SENSOR -BECOMES PINGER
GRAPPLING WIRE 2 MILES LONG

Schematic of Submersible Test Unit (STU) Complex.

The capacity of the anchor depends upon the soil characteristics. In a competent soil the experimental model will support 80,000 pounds in bearing, or a pullout force of 40,000 pounds. An overturning moment of about 120,000 foot pounds can be resisted.

An attached structure could be level when the padlock anchor is on a slope as great as 15°.

Materials of Construction.

Undersea structures having service lives ranging from a few months to those of structures ashore, service lives of perhaps 20–25 years, must be constructed of carefully selected material. There is today very little information on long-time behavior of materials in the deep ocean environment. To obtain such information NCEL has a dual program. The first part of this program includes exposing materials in the deep ocean at off-shore sites at normal depths of 6,000 feet and 2,500 feet. The 6,000-foot depth, chosen because it represents a deep sea environment on the edge of a major basin, is significantly beyond the range in which construction operations have been conducted to date, and seemed within our reach at the time we planned our operations.

The 2,500-foot depth was chosen because it represents the level of minimum oxygen concentration in our area and, therefore, may yield a boundary value on deterioration results.

Specimens were attached to tower-like structures called submersible test units or STU's. The STU's also contain soil samples, pingers and other equipment.

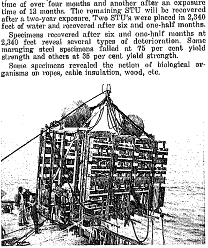
The STU's in 6,000 feet of water are on the edge of the Pacific Basin about 35 miles southeast of San Miguel Island, westernmost of the islands off Santa Barbara, Calif., and about 85 miles from the harbor at Port Hueneme.

The STU's in 2,500 feet of water are about 15 miles north of the deeper site and 20 miles west of San Miguel Island.

To date six STU's have been installed. The first unit, placed at 6,000 feet in March 1962, was recovered in February 1965 after approximately three years of exposure. Three additional STU's were placed at the 6,000-foot depth. One was recovered after an exposure time of over four months and another after an exposure time of 13 months. The remaining STU will be recovered after a two-year exposure. Two STU's were placed in 2,340 feet of water and recovered after six and one-half months.

Specimens recovered after six and one-half months at 2,340 feet reveal several types of deterioration. Some maraging steel specimens failed at 75 per cent yield strength and others at 35 per cent yield strength.

Some specimens revealed the action of biological organisms on ropes, cable insulation, wood, etc.



Typical Submersible Test Unit (STU) just after recovery.

Many agencies, both governmental and private, have expressed great interest in our materials program and have furnished specimens for exposure. We specify details as to the rack space available and return the specimens after exposure, following clearing and shipping directions of the sponsor. The Bureau of Naval Weapons has been of considerable assistance in this program by helping to defray the cost of these exposures at sea.

Based on visual inspection, only a few cases of deterioration different from those found in moving surface water have been noted.

The second part of the materials program includes exposing specimens in a simulated ocean environment in the laboratory. This we will do in pressure vessels in which chemical properties of the sea water and its temperature can be maintained at levels representative of the ocean environment. The facility consists of six 9 x 27- inch vessels made from 16-inch naval projectiles and one 18 x 36-inch vessel.

It is hoped that through the use of these facilities an adequate correlation can be obtained between the specimens in the simulated and the actual ocean environments so that most future materials testing can be done in the laboratory, a more economical type of experiment.

Construction Techniques

It appears to observers of the deep ocean engineering scene that there will be requirements to place very heavy structures or equipments on prepared foundations on the sea floor. The Navy, therefore, needs to learn about techniques and schemes for so doing.

One obvious technique for easing the foundation problem is to reduce the load on the foundation by means of buoyancy devices. However, a disadvantage is immediately disclosed in that very large buoyant packages, difficult to handle, are required. Furthermore, if one must depend upon buoyancy, a risk is introduced since the buoyancy may be lost due to accident, deterioration, hostile action, or unforeseen natural events.

In any event it is necessary to understand the motions of work platforms excited by the sea, the motions of load suspended from very long elastic lines and the impact forces to be expected when lowering the load to a foundation. From such understanding might evolve improved winches, criteria for regulating construction time, load limiting devices, or devices to permit finely controlled positioning at the foundation depth.

NCEL's approach to such problems has been both analytic and experimental. The motions of work platforms in the ocean have been analyzed using power-spectrum techniques. Model studies of work platforms have been conducted in wave basins.

A specific problem under study, concerning construction

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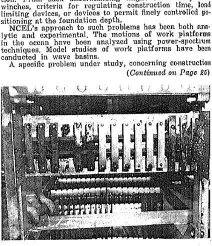


Specimens exposed at depth of 2,340 feet for six and one-half months just above the ocean floor and under various degrees of bending stress.

MEETINGS AND SYMPOSIA

NOVEMBER 1965

V/STOL Symposium, Nov. 3–4, at Wright-Patterson AFB, Ohio. Sponsor: American Helicopter Society. Hosts: AFSC Aeronautics System Div., Research and Technology Div. and Systems Engineering Group. Contact: George Dausman, Wright-Patterson AFB, Ohio, telephone (Area Code 513) 253-7111, ext. 25104 or 23164.

Fourth Hypervelocity Techniques Symposium, Nov. 15–16, at Arnold Air Force Station, Tenn. Sponsors: Arnold Engineering Development Center, ARO, Inc., and Denver Research Institute. Contact: J. Lukasiewicz, Arnold Air Force Station, Tenn., telephone (Area Code 615) 455-2611, ext. 7204 or 7205.

Fourth Annual Symposium on Physics of Failure in Electronics, Nov. 16–18, at Illinois Institute of Technology Research Institute. Co-sponsors: Rome Air Development Center and the Illinois Institute of Technology Research Institute. Contact: Joseph Schramp (EMERP), Rome Air Development Center, Griffiss AFB, N.Y., telephone (Area Code 315) FF6-3200, ext. 2813.

DECEMBER 1965

Fourteenth Annual Wire and Cable Symposium, Dec. 1–3, at the Shelburne Hotel, Atlantic City, N.J. Sponsor: Army Electronics Command. Contact: Milton Tenzer, Symposium Chairman, Electronics Parts and Materials Div., Army Electronics Laboratory, Fort Monmouth, N.J., telephone (Area Code 201) 535-1834.

International Symposium on Differential Equations and Theory of Systems, Dec. 27–30, at the University of Puerto Rico. Sponsors: Air Force Office of Scientific Research, Brown University and the University of Puerto Rico. Contact: Maj. B. R. Agins (SRMA), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C., telephone (Area Code 202) OXford 6-1302.

JANUARY 1966

Unguided Rocket Ballistics, Jan. 11–13, at Texas Western College, El Paso, Tex. Sponsor: Army Electronics Research and Development Agency. Contact: Vertis C. Cochran, Army Electronics Research and Development Agency, White Sands Missile Range, N.M.

Research Effectiveness as Related to Vehicles, Jan. 28–29, at Detroit, Mich. Sponsor: U.S. Army. Contact: Paul D. Denn, Chief, Research Div., Army Mobility Command, Warren, Mich., telephone (Area Code 313) 756-1000.

International Symposium on Information Theory, Jan. 31–Feb. 2, at the University of California at Los Angeles, Calif. Co-sponsors: Air Force Office of Scientific Research and Information Theory Group of the Institute of Electrical and Electronics Engineers. Contact: Prof. J. Carlyle, UCLA, Los Angeles, Calif., telephone (Area Code 213) 478-9711, ext. 7181.

FEBRUARY 1966

Eighth Joint Industry-Military-Government Packaging and Materials Handling Symposium, Sheraton Park Hotel, Washington, D.C., Feb. 28–March 2. Sponsors: National Security Industrial Assn., Office of Secretary of Defense, Military Services, Department of Commerce, NASA, GSA and AEC. Contact: W. J. Monaghan, NSIA, Suite 800, 1030 15th St., N.W., Washington, D.C.

MARCH 1966

Conference on Functional Analysis, March 28–April 1, at the University of California, Irvine, Calif. Co-sponsors: Air Force Office of Scientific Research and the University of California. Contact: R. G. Pohrer (SRMM), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C., telephone (Area Code 202) OXford 6-5248.

Second International Symposium on Aerobiology, March 29–30, at Chicago. Sponsors: U.S. Army and Illinois Institute of Technology Research Institute. Contact: Elwood K. Wolfe, Director of Technical Services, Fort Detrick, Frederick, Md., telephone (Area Code 301) 663-4111, ext. 2214.

Bionics Symposium 1966, dates undetermined, at Sheraton Hotel, Dayton, Ohio. Sponsors: Aerospace Medical Research Laboratory, Aerospace Medical Div. and Avionics Laboratory, Research and Technology Div. Contact: Dr. H. L. Oeistreicher (MRBAM), Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio, telephone (Area Code 513) 253-7111, ext 3-6108.

APRIL 1966

Second Symposium on Marine Bio-Acoustics, April 6–8, at American Museum of Natural History, Central Park West at 79th St., New York City and Naval Training Device Center, Port Washington, N.Y. Sponsor: Naval Training Device Center. Contact: F. E. Wolfe, Jr., Research Program Manager, Naval Training Device Center, Port Washington, N.Y., telephone (Area Code 516), PO 7-9100, ext. 550.

Symposium on Generalized Networks, 14th in a series of international symposia organized by the Polytechnic Institute of Brooklyn, Microwave Research Institute, April 12–14, at New York City. Sponsors: Air Force Office of Scientific Research, Office of Naval Research and the Army Research Office, Society for Industrial and Applied Mathematics and the Institute for Electrical and Electronics Engineers. Contact: Lt. Col. E. P. Gaines, Jr., (SREE), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C., telephone (Area Code 202) OXford 6-3671.

Twentieth Annual Frequency Control Symposium, April 18–20, at the Shelburne Hotel, Atlantic City, N.J. Sponsor: Army Electronics Laboratories. Contact: M. F. Timm, Solid State & Frequency Control Div., Army Electronics Laboratories, Fort Monmouth, N.J., telephone (Area Code 201) 535-1728.

SPRING 1966

Second International Symposium on Air-Borne Infection, dates undetermined, at Baltimore, Md. Sponsors: Department of the Army and The Johns-Hopkins School of Medicine. Contact: Elwood K. Wolfe, Director of Technical Services, Fort Detrick, Frederick, Md., telephone (Area Code 801) 663-4111, ext. 2214. (Rescheduled from October 20–21, 1965.)

Management Improvements Within the Naval Material Support Establishment

by

Rear Admiral R. L. Shifley, USN
Vice Chief of Naval Material

There are three especially prominent areas where major efforts are being made to effect management improvements in the Naval Material Support Establishment (NMSE)—the organization which provides the material which keeps the fleet at sea and ready.

The first of these is improved planning. Never before in the history of the U.S. Navy have so many proposed actions been so thoroughly examined and re-examined, by so many, with such favorable results. Examples of the "study syndrome" within the Naval Material Support Establishment are easy to find.

Advance Procurement Planning (APP), for example, is a field which is really opening wide now. Advance Procurement Planning puts the procurement expert alongside the design engineer.

With APP, new systems will be "procurement ready" when they are approved by the fleet.

The APP for the SPS–48 radar, for example, showed that the Navy would save $600,000 if the purchase was made on a multi-year contract. This finding was reached while the radar was still in the developmental stage, not some time after it had been released for production.

Project Definition, or Contract Definition, as it is now called, is another aspect of this DOD-wide insistence on deciding what you are doing before you do it.

Third is the increasing attention the Navy is giving to Technical Development Plans. TDP's spell out exactly how the effort to respond to a Specific Operation Requirement will be carried out. Studying the problem and setting forth its solution in detail and in advance saves time and money.

Another example of the "study syndrome" is the Navy's adoption of the "Project Master Plan," a basic, overall long range plan of progress required for each newly chartered project.

A second drive toward better management is taking place in the field of contracting. Competition, multi-year purchasing and two-step formal advertising are three indicators of better management in contracting.

The Cost Plus Fixed Fee contract is almost a thing of the past. Whereas five years ago 31 per cent of the Navy's procurement money was paid under Cost Plus Fixed Fee contracts, the figure for 1965 was down to 9.4 per cent. This illustrates the Navy's effort to achieve better returns on expenditures—through competition.

Multi-year purchasing is another contracting trend which promises both better management and increased economy. Under this procedure, the Navy contracts for programmed requirements in the current year and up to four years beyond the current year. The contractor is able to procure materials and plan production on the basis of large quantities and long production runs, with better returns to the Government.

Two-step formal advertising is being emphasized as a means of obtaining competition on items that would otherwise be restricted to sole source procurement. Under this procedure the first step determines whether a "meeting of the minds" has taken place as to the technical characteristics of the item. The second step determines price.

Two-step formal advertising has advantages both for the buyer and the seller and will be used more and more frequently as time passes.

More thorough study of intended actions and better contracting procedures are two of the more prominent drives for better management within the Naval Material Support Establishment today. But standing head and shoulders above all other moves to increase management effectiveness within the Naval Material Support Establishment is one which is now moving forward ambitiously: Project Management.

When the Naval Material Support Establishment was formed at the end of 1963, the Navy had only two designated projects. One, the Surface Missile System, was in its formative stages, and the other, the Special Projects Office, was successfully accomplishing its mission of producing the Polaris force.

Today, 20 months later, 22 projects have been chartered:

Nine of the project managers report to the Chief of Naval Material. They are managers of the:

- Fleet Ballistic Missile Project
- Surface Missile Systems Project
- Anti-Submarine Warfare Systems Project
- F–111B Weapon System Project
- Instrumentation Ships Project
- All-Weather Carrier Landing Systems Project
- Reconnaissance, Electronic Warfare, Special Operations and Naval Intelligence Processing Systems
- Air Traffic Control Radar Beacon System and IFF Mark XII System
- OMEGA Navigation System

The first three were chartered by the Secretary of the Navy and the remaining six by the Chief of Naval Material. All nine, however, report to the Chief of Naval Material.

Of the remaining projects, two are within the Bureau of Ships. They are: SUBAJAD, a classified project and SATCOM, the Satellite Communications Project.

The Bureau of Naval Weapons has designated 11 projects. They are:

- E–2A Early Warning Aircraft
- F–4 Phantom II Fighter
- A–6 Intruder attack aircraft
- A–5 Vigilante attack aircraft
- A–7 Corsair II attack aircraft
- OV–10 (COIN) Counterinsurgency aircraft
- DASH Drone anti-submarine helicopter
- Shrike Weapon System Project
- Integrated Light Attack Avionics System
- Integrated Helicopter Avionics System
- Versatile Avionics Support and Test

As Vice Chief of Naval Material, RAdm. R. L. Shifley is directly responsible for programming and financial management in the Naval Material Support Establishment. He is also responsible for the efficient utilization of project management within the Navy. He is a former carrier division commander and wartime commander of an air group during numerous air-sea battles over the western Pacific.

Three torpedoes, the Mark 44, 46 and 48, have been chartered as separate projects. The managers of these torpedo projects report to the Manager of the Anti-Submarine Warfare Systems project.

One of the factors which shapes the Navy's Project Management philosophy is the importance of a deliberate approach. A deliberate approach in setting up new projects is necessary because the projects must be kept in balance with the bureau functional organizations.

In project management, the organizational pattern resembles a matrix. As shown on Chart A, the Bureaus can be thought of as the vertical elements of the matrix, and the Project Managers as the horizontal elements. Together the Bureaus and the Project Managers share the parcels of resources and know-how which are the substance from which the Navy creates and deploys new weapons systems.

Chart A shows that, where necessary, projects can cross Bureau boundaries and, after proper coordination, utilize resources which are otherwise under Bureau control.

The Project Manager has positive control of his own resources—the money. The Bureaus have the technical expertise—the engineering know-how.

The Project Managers head streamlined management teams. They are in the business of deciding *what* should be done and *when* it should be done. The Bureaus decide *how* the thing is to be done. The project offices are relatively lightly staffed. They control the overall project. They make the plans and they worry about the interfaces. But the *how* part is a responsibility assigned to the Bureaus.

The Navy's long term investment in competence and capability resides within the functional entities—the Bureaus. Every time a new project is set up it has to be staffed from existing resources, the pools of talent which are presently assigned to the Bureaus.

This explains why the Navy has to move at a deliberate, carefully considered speed in establishing new projects. It has to make sure that too much talent isn't drained away too rapidly from the functional organization. The bureaus need time to adjust, as new projects come into being. The adoption of project management in the Navy is for this reason a gradual process.

It is recognized that project management is not the panacea for all the Navy's hardware problems. But it is a healthy example of what the Navy is doing to improve its management today. The climate is right and the Naval Material Support Establishment is ideally structured to utilize the Project Management technique.

In summary, three drives toward improved management are highly visible within the NMSE today. These are more thorough planning, new and more astute contracting and, most dynamic of all, the move toward Project Management.

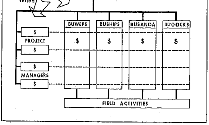


Chart A.

INDUSTRY BRIEFS

Lockheed Aircraft Corporation's president, Daniel J. Haughton, was the winner of the National Defense Transportation Association's 16th Annual National Transportation Award. Selection for the award, which is given each year to a person or organization contributing most to defense transportation, was made by the Joint Chiefs of Staff . . . **American Telephone and Telegraph Company** is the first recipient of the new Air Force Citation honoring civilian employers for supporting and encouraging the participation of Air National Guardsmen and Air Force Reservists in the Air Reserve program. AT&T President, H. I. Romnes, accepted the citation from Air Force Chief of Staff General J. P. McConnell.

In preparation for missions geared toward improving man's knowledge of the stars, **Grumman Aircraft Engineering Corporation** announced that Prototype Qualification Tests on the Orbiting Astronomical Observatory for NASA have been successfully completed . . . **LTV Aerospace Corporation** reports that it has delivered the production model of the Astronaut Maneuvering Unit to the Air Force.

Carroll C. Smith, **Vitro Laboratories** engineer, has been awarded a patent by the U. S. Patent Office for equipment and techniques for ballasting torpedoes, self-propelled mines, missiles or other cylindrical bodies so that they remain in the proper attitude when running . . . A cost reduction of $135,000 on the Transtage Program has resulted in an Air Force citation to **Aerojet General Corporation.**

Raytheon Company arranged for representatives of the Peace Corps to have in-plant interviews with their employees interested in possible service with the Corps . . . **Ryan Aeronautical Company** reports that more than 215 flights have been made in the General Electric Company-Ryan XV–5A flight test program since it was launched last year.

The first **Burroughs Corporation** Backup Interceptor Control facility has been turned over to the Air Defense Command. . . . The **Sylvania Electronic System's** 1965 Sylvania-Minuteman Award for the most outstanding U. S. Army ROTC cadet was won by Northeastern University student David Potter. The presentation was made by Major General Charles S. O'Malley, Jr., Commanding General, III U. S. Army Corps and Fort Devens, Mass.

A multi-font print reader with a reading rate of 500 characters per second—about 25 times faster than the conventional manual speed—has been developed by the Rome Air Development Center in conjunction with the **Philco Corporation** . . . **Cessna Aircraft Company's** T–14A became operational in the Air Training Command with the Undergraduate Pilot Training class . . . The increasing importance of data management as the key element in decision making was stressed recently by Karl G. Harr, Jr., Pesident of the **Aerospace Industries Association** at the Data Management Symposium co-sponsored by the U. S. Air Force and AIA. The challenge is that the "right people get the right data at the right time."

Security Films Available For Industry Training Programs

Defense contractors who are conducting security education programs at their facilities can obtain security training films from the Department of Defense to supplement presentations, lectures and conferences.

Requests for security training films should be submitted to the Director, U.S. Audio-Visual Communications Center, at the following addresses:

First U.S. Army, Governors Island, N. Y.
Second U.S. Army, Fort George G. Meade, Md.
Third U.S. Army, Fort McPherson, Ga.
Fourth U.S. Army, Fort Sam Houston, Tex.
Fifth U.S. Army, Fort Sheridan, Ill.
Sixth U.S. Army, Presidio of San Francisco, Calif.
Military District of Washington, Fort Meyer, Va.

Security films available:

The Hollow Coin (DODIS-3)—30 minutes, black and white. A documentary concerning the events leading up to, during and following the trial of Soviet espionage agent Rudolf Abel, convicted of espionage activity against the United States.

The Daily Enemy (DODIS-4)—20 minutes, color. Depicts carelessness, complacency and ignorance as enemies of good security. Shows incidents of the more common security violations to motivate viewers toward good security practices.

The Security Man (DODIS-5)—30 minutes, black and white. Treats six problem areas confronting industrial security personnel. Security violations are exposed and corrective actions are shown.

The Secret Underworld (DODIS-6)—25 minutes, black and white. A documentary, based on the case of convicted spy Gordon Lonsdale of the United Kingdom, demonstrating the reality of the expionage hazard.

The Enemy Agent and You (DODIS-7)—25 minutes, black and white. Reveals techniques and devices used by enemy agents to obtain information. Emphasis is placed on security consciousness and disciplined moral behavior, particularly when traveling in a foreign country.

Small Business Prime Contract Awards Make Gain in FY 1965

Secretary of Defense Robert S. McNamara has reported to President Johnson that small business firms received $5,305 million in defense prime contract awards during FY 1965. This is $463 million more than the total for the previous fiscal year and the highest dollar volume since the Korean War.

Small business firms received 20.3 per cent of all Defense prime contract awards to U.S. business firms during FY 1965 compared to 18.0 per cent for FY 1964. It was the highest small business percentage since FY 1957.

These results are closely related to the active programs to assist small business initiated by the Department of Defense and carried out by Small Business and Procurement Specialists in all Defense procurement installations.

Procurement of commercial type items, military construction and small purchases increased by $394 million, and civil functions (rivers and harbors work of the Army Corps of Engineers) increased by $133 million. The small business share of these contracts were 44 and 49 per cent, respectively.

The small business "set-aside" program has been a favorable factor in the total dollars awarded to small business firms. This preference program has steadily increased during the seven-year period starting in 1959 when $643 million were awarded through set-asides to $1,642 million in FY 1965.

Another significant DOD program, which has been helpful to the scientific and industrial community in small business source development, is the small business and labor surplus area procurement clinics which have been held in a number of sections of the country. At these clinics (in which Defense is joined by the Department of Commerce and the Small Business Administration) the Federal contract process is explained by procurement specialists and current bid packages are available for consideration and subsequent bid action by potential contractors.

PERT Orientation Courses Offered to Industry

A series of courses designed to encourage uniformity in the application of advanced management techniques will be given at the Defense Department's Program Evaluation and Review Technique (PERT) Training Center in Washington, D.C. during FY 66.

Representatives from industrial concerns engaged in Government-sponsored programs, as well as the Department of Defense and other Government agencies, are invited to attend.

Information about the course or registration procedures may be obtained from the PERT Orientation and Training Center, Vanguard Building, 1111 20th St., N.W., Washington, D.C. 20333, telephone (Area Code 202) Oxford 6-7185, 6-7187 or 6-7197.

Courses offered include a three-hour Orientation Session for Top Executives, an eight-hour Middle Management Orientation Course and a Management Training Workshop of 40 hours.

Purpose of the Top Executives Course is to familiarize administrators of Government and industrial organizations with the concepts and uses of PERT as a systematic approach to the decision-making process. Emphasis will be placed on the principles of PERT and their managerial implications rather than on the mechanics of the techniques. Courses will convene on Nov. 4, Dec. 9, Jan 14, Feb. 11, March 3, March 31, April 15, May 12 and June 2.

The Middle Management 8-hour course is designed to acquaint Government managers, corporate and program representatives of industrial organizations with the concepts and uses of PERT and related techniques. The course is primarily intended for those middle management personnel who cannot attend the 40-hour PERT course. Lectures and discussions will be included in the day-long session which is scheduled for Nov. 2, Nov. 23, Dec. 7, Jan. 11, Jan. 26, Feb. 8, March 1, March 29, April 12, April 26, May 10, May 24, June 14 and June 28.

The Workshop is divided into two sections and provides attendants with a systematic approach to the decision-making process. Lectures and films are alternated with workshop sessions using simulation exercises and case problems to illustrate the application of the principles of PERT.

Principles of PERT networking techniques, calculations, scheduling and network updating will be covered in the first section.

The second session covers principles and operating methods of the PERT Cost system. A continuous case problem runs through all five days, which not only ties the two sections together but gives an indication of the advantages to be gained from integrating cost and schedule control on a project.

A 4–5 hour session in CAPERTISM (Computer Assisted PERT Simulation) will be offered on the evening of the third day of the course. The CAPERTISM exercise introduces the student to computerized means of simulating cost and time effects of alternatives for attaining program or projected goals.

A charge of $58 will be required from all non-Defense Department participants in the one-week course. Non-DOD Government agencies, industrial contractors, and authorized foreign nations will be billed by the Secretary of the Air Staff, Budget and Accounting Branch, Headquarters, USAF, on the basis of actual participation.

CALENDAR OF EVENTS

Oct. 26: American Society of Safety Engineers . Meeting, Chicago, Ill.

Nov. 1–2: Society of American Value Engineering, West Coast Colloquim, San Diego, Calif.

Nov. 1–3: International Aviation Research and Development Symposium, Atlantic City, N. J.

Nov. 3–4: Aerospace Industries Assn. of America, Product Support Committee National Meeting, Washington, D. C.

Nov. 3–5: Northeast Electronics Research and Engineering Meeting, Boston, Mass.

Nov. 8–12: Society of Automotive Engineers Meeting, New York City.

Nov. 15–17: International Congress on Air Technology, Hot Springs, Ark.

Nov. 16–19: Interagency Chemical Rocket Propulsion Group Meeting China Lake, Calif.

Dec. 1–3: National Assn of Mfg. Meeting, New York City.

Dec. 4: Aviation Demonstration, Fort Sill, Okla.

Dec. 5–9: American Institute of Chemical Engineers Meeting Philadelphia, Pa.

Dec. 6–8: Chemical Specialties Mfg. Assn. Meeting, Washington, D. C.

Dec. 13–15: American Institute of Aeronautics & Astronautics Specialist Meeting, New York City.

Dec. 17: 62nd Anniversary of Powered Flight.

Dec. 26–31: American Assn. for Advancement of Science Meeting, Berkeley, Calif.

Jan. 11–12: Man's Extension Into the Sea, Tentative Industrial Information Program, Washington, D.C.

Jan. 13: 18th Pacific Coast Regional NSIA Dinner, Los Angeles, Calif.

Feb. 28-March 2: 8th Joint NSIA Industry—Military—Government Packaging & Materials Handling Symposium, location undetermined. Sheraton Park Hotel, Washington, D.C.

Liaison Room at AUSA Convention in Main Exhibition Hall

The Army-Industry Liaison Room at the Association of the U. S. Army Convention, Washington, D. C., October 25-27, which in previous years was located in the Franklin Room, will be located in the Main Exhibition Hall of the Sheraton-Park Hotel this year as a greater convenience to industry attendees.

In addition, the Army's two new industry information programs—the Qualitative Development Requirements Information Program (QDRI) and the Advanced Planning Procurement Information Program (APPI)—will highlight the activities of the Army-Industry Liaison Room.

Representatives will be present from the U. S. Army Materiel Command and its subordinate commands, the Department of the Army Office of the Chief of Research & Development, the Office of the Assistant Secretary of Defense (Installations & Logistics), and the Office of the Assistant Secretary of Defense (Public Affairs), the Defense Supply Agency and the Defense Documentation Center. Personnel manning the Liaison Room will be able to discuss any matters concerning research and development and end-item procurement.

Tinker AFB—Oklahoma City Cooperation of Mutual Benefit

Civic leaders throughout the country are taking an interested look at the cooperative base-community relationship which has existed between Tinker Air Force Base and its host community of Oklahoma City for the past 23 years.

Representatives from as far away as San Bernardino and Sacramento, Calif., and Warner-Robins, Ga., have met with base and Chamber of Commerce officials in the central Oklahoma metropolis to get ideas for promoting base-community relations in their areas. Officials from San Antonio, Tex., have also indicated interest in a similar visit.

Oklahoma City Chamber of Commerce has rallied city government, planning commissions, state highway department and other agencies to insure that conditions beyond the control of Tinker AFB officials meet base requirements.

Fifty-four per cent of Tinker AFB's 3,800 acres have been donated by the community. An additional 12,000 acre "buffer zone" was acquired by the Chamber to insure protection and flexibility for the base.

As a result of the Chamber's work, the huge logistics base is now served by an interstate highway on the north. A by-pass for the interstate highway is scheduled for construction along Tinker AFB's south boundary.

The Air Force Logistics Command's Oklahoma City Air Material Area, headquartered at Tinker AFB, employs most of the 19,000 civilians employed at the base.

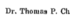
NOTICE

In the circularization of the *Defense Industry Bulletin* which has just been completed, many survey cards were returned indicating a desire to be retained on our distribution but with the portion of the card containing the name and address of the subscriber removed.

As a result many subscribers who wish to be retained on the mailing list will be removed since we have no means of identifying them. Therefore, if you fail to receive your December issue, please advise us and we will be pleased to reinstate your name on the Bulletin mailnig list.

The Editor.

FROM THE SPEAKERS ROSTRUM



Dr. Thomas P. Cheatham, Jr.

Excerpt from address by Dr. Thomas P. Cheatham, Jr., Deputy Director of Defense Research & Engineering (Tactical Warfare Programs), before the Armed Forces Communication and Electronics Association, Fort Monmouth, N. J.

The Military-Industrial Interface

* * * * * * * * * * * *

In keeping with our systems oriented approach for solving technical problems, I would like to discuss with you some of the various aspects of the technical, management and organizational interfaces that occur between elements of the DOD and members of the industrial community. This interface occurs principally in the execution phase of the RDT&E cycle. Since it is the pay-off phase, it is not unreasonable to find it receiving special attention. . . .

Rather than dwell upon the more familiar aspect of the Government/industrial interface in contractual areas, I am going to discuss some of the lesser known areas which I think have an important bearing upon this interface. The first of these areas is the Five Year Force Structure and Financial Plan. This is the basic Department of Defense planning vehicle. All of the various projects and tasks and sub-tasks in the RDT&E efforts go together to form supporting program elements that make up this force structure and financial plan. It is the quality of this plan that determines the Congressional response. From the Congress we obtain one of our two most important resources and that is money. The other resource, time, is not truly under our control. Political, fiscal and military matters are determining elements or constraints of the time resource that is available for accomplishing the R&D effort. While the resources are not completely under our control, the five year planning of their expenditure is very much under our control and is one of the things that must be done well. . . .

To accomplish this goal it is going to be necessary to plan and formulate programs that are achievable. It will take some very sharp pencils and pretty shrewd figuring to plan these programs. It will take some guts to be realistic about the relative importance of reliability, maintainability and availability as opposed to a continuous exercise of improvement in laboratory performance. Let me assure you, though, that this type of hard nosed planning is far easier than it will be in the future to justify the deficiencies in planning that resulted in programs being stopped due to shortages of money or time that led to a lack of performance for the field soldier. The competition among the various programs and our world-wide service needs are just too keen to tolerate poor and unrealistic planning.

Now once this planning has been done and done well, it will provide industry some logical guidelines for directing their own in-house research efforts. This five year plan follows the evolutionary R&D cycle in that it starts out with research and takes the ideas from research and puts them into exploratory development to see what possible applications they have. Growing out of this work we have the advanced development, engineering development and operational system development phases which ultimately result in hardware delivered to the services. One of the most frequent technical activities that complicate the RDT&E cycle is when we engage in activities that involve concurrency between any of the phases of this evolutionary cycle. Both the military and industrial sides of the house will have to work together to insure that this cycle is followed. Through close cooperation and information exchange with industry, I think it is possible to follow this cycle much better than we have in the past. We can lubricate this interface as it relates to the evolutionary cycle by promoting activities that involve a mutual exchange of candid and frank information between Government and industry. AFCEA, as an organization, is one means of accomplishing this interchange of information. The advanced briefings to industry program is another means of promoting this exchange.

I would also like to point out that the Department of Defense standards of conduct were not designed to make members of the Government avoid association with industry. These standards of conduct were provided as a series of guidelines to establish a higher degree of objectiveness in the relations between Government and industry. They were also designed to curb excesses on both sides that have grown up in recent years. . . .

Next let me be just a little bit more specific for awhile and cover some interface areas that I think need specific attention. The first area that comes to mind is the marketing area. Here is an area that has to be characterized by not only open doors and open minds but also by a high degree of professional competence. To those of you that are specifically engaged in marketing activities, I would like to remind you that it will be essential to gear your marketing efforts to a new level of sophistication. Marketing with the Defense Department requires a newer and higher degree of professionalism than ever before. Ten years ago or less we could describe marketing approaches as ranging from "hard" sell to "soft" sell. These words are still useful today but they are also inadequate to express the newer depth and scope demands of marketing planning, marketing strategy and marketing execution.

First of all if we define marketing as a primary interface activity between industry and Government customer we know that for a proper match it must be capable today of representing in a highly professional way such factors as technical trade-offs; cost effectiveness; interpretation of the companies' management philosophy; policies and procedures; review of past operational technical and fiscal histories; insight and rationale of product improvement factors in relation to in-house research; an understanding of the newer Government processes identified by such jargon as SOR, QMDO, PCP, Formats A and B, TDP, FDP, etc.; insight as to timing of programs; and identification of key personnel and key technological factors—to name only a few. I will overstate it to some degree—but in the past a marketing man was more apt to be selected for his personality and charm, his ability to entertain and know his way around on a personal contact basis. This to a large degree has fallen away. Golf, to select a particular example, is pleasant during a working day but no longer essential or possible—in fact today a marketing approach that revolves around a golf club membership is more apt to be a distinct negative. The reason is a simple one—the customer is too busy—his time is too important and he would much prefer that you shorten his workload by bringing to him the right data at the right time and with a minimum of fuss. This is not to say that everything must be done in 15-minute increments or less—on the contrary, I am one of the first to rise in support of the fact that some things cannot be done in a short time—some technical and operational problems require lengthy discussion and examination in an informal and free exchange atmosphere. This atmosphere should be subdued, conducive to the problem and in impeccable taste—and it must be efficient in its own time period.

The enormity of the job that we in industry and in the Government are confronted with can be overwhelming. Our mutual charge of responsibility to the Armed Forces for delivering the appropriate equipment, the proper mix of equipment and the best equipment makes demands on efficiency and integrity that are of a new order to that demanded some years ago.

Our Defense Department has gone through a major change—formats and procedures are different—but the real major change is this demand for higher efficiency in that we want higher performance across the board for less money. To make this philosophy felt in depth and to make it stick a few "two-by-fours" have been used to get everyone's attention. Sometimes the blows struck for freedom and attention have been so hard and so precise that the cry has been heard across the land that the Department of Defense must think that the military is all stupid and that industry is all crooked. Quite the contrary, the ratio of good to bad is a statistic established in this land as overwhelmingly in favor of the good. The military is well recognized for its brillance and dedication and its insight into military operations and industry is recognized, in turn, for its iniative, spirit of inventiveness, competitiveness, ingenuity and insight into how to build needed industrial capabilities. All that has been asked is that we achieve a new level and scope of preparedness where the limitations of a finite bank require that we solve our problems not by the easy and facile addition of money and an irresponsible broadcast investment in research and development but instead through thoughtful and careful objective study of cost effectiveness and needed or implied adjustments in force structures. It is not a question of centralization or decentralization but rather the proper choice and mix of these two important management concepts in a manner that is consistent with the operational scope we face. Take any successful company, such as your own, you will find in its history that new organizational structure has been demanded as you went from small to medium to large. The U.S. Government and the Defense Department are no different—and because the job has changed in scope we are now making new demands on the professionalism of all personnel and on the sophistication of our organizational structure.

I have made these remarks to set the stage for my statement that Government marketing is coming of age with stiffer requirements than ever before on the selection, training and professional growth of personnel assigned to this field. I find it difficult to conceive of an exceptional marketing man (and who would want anything else) who does not have a technical background, modest operational experience in appropriate management and technical areas and a continuing interest in political and financial matters. He must know his company and its products, preferably on the basis of a tour of duty with the home plant or laboratory—certainly he should no longer be the general purpose salesman who doesn't care what he sells just as long as the commission is big. The marketing man that is dedicated to his company and to its product on the basis of integrity and service will be more useful at this important interface and will best serve our joint needs.

In this particular area let me now try to give you some specific advice:

- Raise the sights on your requirements for professional backgrounds, experience and conduct of marketing personnel.

- Be selective of material presented and be very selective of those who are to present it with regard to their qualifications and personal knowledge of the subject. A technical program should be presented by the most qualified technical man in your organization that is directly associated with the program. To have him accompanied by one qualified and professional marketing man for continuity is good; but to have him accompanied by six or seven assorted management, public relations and "salesman" types is a waste of time, money and customer interest. It is recognized that there are often management problems that require management representation. Most often, however, we desire to meet management on its home ground.

- Be responsive to requests from the customer for information and do not misuse the opportunity for the introduction of miscellaneous and irrelevant material that was not asked for.

- Recognize that getting to the top is not always your best marketing strategy. In any program of interest to you there are "key" personnel at all levels with associated timing factors for types of material that the program will ask for. There are no short cuts. Our system of exploratory research, advanced development and engineering has an associated contracting structure and procedure that we feel is not only excellent but necessary. Your ability to understand the system, its philosophies, procedures and demands will make it work to the advantage of all of us. Your ability to do this smoothly and with great sensitiveness is a mark of achievement that will measure the degree of professionalism attained by your marketing organization.

- Recognize that contractor selection is a major responsibility of the services and their associated laboratories. We in the Office of the Director of Defense Research and Engineering are primarily interested in concepts and technological process and guidance. We are involved in contractor selection in a limited way and only for special reasons of review and overall evaluation as the matters at hand may affect general trends and directions. Contractor selection is clearly a secondary interest with regard to our responsibilities.

Within the framework of the above remarks let me add that I and my staff will always be glad to see you, to listen, and to talk to you.

We, you and I, have an important job to do. Our interface bluntly requires a refined appreciation of the art of communication. This art can be defined in a double negative way by saying that it should never be: too little, too late, or too much.

Lay it on your marketing personnel that there is no excuse for big mistakes in their profession—the job requires hard work, long hours for adequate preparation and steady professional growth.

This all adds up to a consideration on your part of the cost effectiveness of cutting soft and meaningless entertainment allowances in preference to the value of acquiring a more talented and professionally oriented marketing organization. We would much rather be impressed than charmed. In the language of your military customers, it is time to get the operators out of the act and time to make each of your marketing organizations "operationally ready."

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VAdm. Joseph M. Lyle, USN

Excerpts from address by Vice Admiral Joseph M. Lyle, SC, USN, Director, Defense Supply Agency, at the Kentucky Science and Industry Procurement Conference, Louisville, Ky.

FUNCTIONS OF THE DEFENSE SUPPLY AGENCY

* * * * * * *

First off, the Defense Supply Agency (DSA) is an independent Defense agency established in the fall of 1961. It is outside the Military Departments, that is the Army, Navy and Air Force, but jointly staffed by military personnel from all the services and by civilian personnel primarily drawn from the Military Departments. In the field of supply, we represent a lateral consolidation of wholesale (these are determination of wholesale requirements, procurement, storage of wholesale stocks and issue to retail customers) for common-use items of food, clothing, fuel, medical, industrial construction, electronics and general supplies. We manage an inventory of nearly 1.3 million items with a value of almost $2 billion which supports sales to our customers of approximately $1.8 billion. We annually procure supplies worth about $3 billion. (The difference between our sales of less than $2 billion and procurement of $3 billion is largely the result of our purchase of bulk fuels, lubricants and petrochemicals, which we do not stock and which are turned over directly to the Military Services.) . . .

DSA deals primarily in items of relatively low unit cost—the "bits and pieces" and soft goods—mostly consumables, as contrasted with the more complex and expensive items such as complete or major components of aircraft, missiles, ships, or other weapons of the military. These remain under the management of the Military Departments. We carry out our supply management functions from six Defense Supply Centers located in five major metropolitan areas—Philadelphia, Pa.; Richmond and Alexandria, Va.; and Dayton and Columbus, Ohio.

In addition to management of common-use supplies, we are responsible for the administration of certain logistics service functions and Defense-wide programs for the Military Departments. These include a program which is administered by the Defense Industrial Plant Equipment Center in Memphis to insure the maximum use of DOD-owned industrial plant equipment such as lathes, boring mills, presses, drilling machines, cranes, etc. We operate a central repository of research and technical documents produced by DOD agencies and contractors in the Defense Documentation Center in Alexandria, Va. We also administer the program for the sale of surplus Defense property and manage Defense Contract Administration Services, about which I shall have more to say a bit later.

Briefly, this sums up the major functions of DSA. Now let me concentrate on two of our functions of more specific interest to you—our supply management operations, with emphasis on our procurement activity and our contract administration services.

Our supply program is carried out by the several Defense Supply Centers in the cities I've already mentioned. These centers receive and fill requisitions for the commodities assigned to them. They place contracts with industry for supplies to replace issues from wholesale inventories or for direct delivery to service customers.

DSA's purchases cover a broad spectrum of industry and reach into every major geographic region of the United States. And when you consider that we don't buy major weapons systems, the $3 billion outlay in Fiscal Year 1965 represents a tidy sum spent for the less sophisticated things supporting our military effort—things that many of you produce or can produce.

At the Electronics Center in Dayton, Ohio, for example, we bought a great variety of electronic components, resistors, capacitors, electron tubes, transistors and other electronic items valued at nearly $135 million during FY 1965. Our General Supply Center in Richmond, Va., purchased almost $146 million in materials handling equipment, photographic film, food service equipment and housekeeping supplies for field, shipboard and airborne use during FY 1965.

At the Construction Supply Center in Columbus, Ohio, our purchases included everything from tires and transmissions to roofing and prefabricated buildings. Last fiscal year we spent over $171 million for construction supplies.

The Defense Industrial Supply Center in Philadelphia bought $117 million worth of such items as metals, hardware and abrasives, blocks and bearings.

Fuels and petro-chemicals are bought from our Defense Fuel Supply Center located at Cameron Station in Alexandria. Our bill for jet fuel, aviation gasoline, auto fuel and diesel fuel amounted to over a billion dollars.

Food, clothing and medical supplies to support the individual soldier, sailor, marine and airman are purchased in Philadelphia. Last year we spent almost $1.8 billion for these commodities; $839 million for food, $317 million for clothing and nearly $122 million for medical supplies. We buy virtually everything in the food line; in clothing and textiles we purchase clothing, shoes, textiles, tentage, etc. In the medical area we procure all types and kinds of medical, dental and veterinary supplies including drugs, medicine and hospital equipment.

Quite apart from the area of procurement of supplies, we have entered into a new relationship with a large part of the defense industry. This is the result of assignment to DSA of responsibility for management of a consolidated field contract administration service. This function does not include, nor will it affect, the purchase or procurement function itself; it involves the administration of the contracts after they have been awarded.

Also excluded is the administration of contracts for major weapons systems annd shipbuilding and construction contracts. These continue to be the responsibility of the individual Military Departments.

The contract administration services we do provide include such things as inspection and acceptance of materiel, accounting for Government property required in the performance of the contract, security clearance of the contractor's facilities and personnel and payment to contractors for goods or services received.

Prior to the assignment of the contract administration services function to DSA, administration of contracts was performed by the Army Procurement Districts, the Navy Inspectors of Material and the Air Force Contract Management Districts. By December of this year some 20,000 personnel from over 150 of these Military Service offices will be consolidated into 11 geographic regions under the management of DSA.

Several benefits will accrue from the consolidated contract administration services. One of these will be lower cost to the American taxpayer as a result of elimination of overlap and duplication of functions. Another, and perhaps the one that might affect you most, is the benefit to contractors of having uniform procedures administered by a single organization.

Our objective in this reduction in duplication of effort, personnel and facilities is to make it easier for you to do business with the Department of Defense and to save you money in the process, both as businessmen and taxpayers. . . .

There are many items on which we have not received the desired degree of competition and I'm sure this is equally true of items purchased by the Military Services. Frequently we have only one or two bidders on items we buy. On some of these there are good reasons for limited competition such as need for special facilities or capabilities, but for most items there are no known factors that are inhibiting competition. Some of the recent examples of items for which there were only one or two bidders are fabric covers for canteens, over $400,000 worth; aluminum canteen cups, over $1 million worth; coats for firefighters, $450,000 worth; wooden tent pins and poles, $500,000 worth; $100,00 worth of hand operated can openers and $100,000 worth of flashlights. I reiterate, these are only some of the examples of items on which we would like to see additional competition (see article, "DSA Seeks New Suppliers, on page 2.). We believe firmly that more competition would be good for us and good for the businessmen who engage in it.

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Three New Navy Project Managers Designated

Managers for three new Navy projects have been designated by the Chief of the Bureau of Naval Weapons. The project managers have specific authority and responsibility for the direction and control of their assigned projects. This includes control of assigned resources, integration of planning and programming and the execution of the project in accordance with approval ulans, schedules and specified operational requirements.

The new projects and project managers are:

A–6/EA–6 Aircraft
Weapon System
Project ---------------Col. Edmond P. Hartsock, USMC
Rm. 3075 Main Navy Building
18th & Constitution Ave. NW
Washington, D.C.
(Area Code 202) OXford 63012

ASROC Missle
Weapons System
Project ---------------Mr. Karl E. Yunker
Rm. 2105A Munitions Building
19th & Constitution Ave. NW
Washington, D.C.
(Area Code 202) OXford 68821

Munitions Project -----Capt. Oliver D. Compton, USN
Rm. 3029 Munitions Building
19th & Constitution Ave. NW
Washington, D.C.
(Area Code 202) OXford 64252

Foreign Visit Clearance Procedure Clarified

Contractors who are planning visits to foreign countries which will involve the disclosure of U.S. classified information are urged to submit visit requests through the Defense Industrial Security Clearance Office (DISCO), Columbus, Ohio, as far in advance as possible of the scheduled date of the trip.

In the past, requests have not been received in time to complete the necessary steps for obtaining permission for visits and have resulted in disapproval.

Suggested lead time prescribed by various governments are: France, 60 days; Germany, 21 days; Ministry of Defense, United Kingdom, 21 days; Canada, 21 days; Ministry of Aviation, United Kingdom, 16 days; and the Netherlands, seven days. Lead times required for other countries will be released hy DISCO when they are learned.

Visit requests may be processed in one of the three following ways:

1. The most expedient and acceptable method is to obtain an export license or letter from the Office of Munitions Control, Department of State, for the classified information to be disclosed to a foreign activity *before* submitting a visit request to the International Programs Division (IPD), DISCO. A copy of the license, which serves as a notice to the contractor that authority for disclosure has been staffed with the appropriate user agency, should accompany the contractor's request for visit when it is submitted to IPD, DISCO.

Requests to the Department of State for export licenses or letters may also be processed at the same time visit requests are being processed through IPD. However, in such cases, the contractor should advise IPD that the requests are being processed concurrently. IPD should be immediately notified when the export license or letter has been obtained and a copy submitted without delay.

2. The second method involves obtaining authority for foreign disclosure of U.S. classified information directly from the user agency prior to submitting the visit request to IPD. A copy of the authorization for disclosure should be submitted with the visit request. Requests for disclosure authority may also be processed at the same time that visit requests are being processed but IPD, DISCO, should be informed. Obtaining a foreign disclosure authorization from a user agency does not, however, relieve a contractor of the responsibility of obtaining an export license or letter from the State Department as provided in the International Traffic in Arms Regulation.

3. Contractors may also request that IPD carry out the steps of obtaining necessary authorization for disclosure of classified information. In this case, contractors should allow a minimum of 30 days, in addition to the lead time, for final approval. Information required by paragraph 43c(7) of the Industrial Security Manual should be included in this type of request. Again, it is pointed out that the contractor may require an export license or letter to comply with provisions of the International Traffic in Arms Regulation.

Army Establishes New Procurement Unit

The U.S. Army has established a new procurement unit at the Engineer Research and Development Laboratories, Fort Belvoir, Va.

Staffed mainly by contract specialists, the new unit is responsible for making first-time quantity procurements of new items released by the Laboratories for introduction into the supply system and administering first production run contracts.

The unit, a detachment of the Procurement and Production Directorate of the U.S. Army Mobility Equipment Center in St. Louis, Mo., is located at the Fort Belvior Laboratories to provide close coordination between procurement and technical personnel through first production of new items.

The R&D Procurement Office, an integral part of the Laboratories, will continue to issue research and development and production-engineering type contracts.

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DECEMBER 1965

SPEAKERS CALENDAR

OFFICE OF THE SECRETARY OF DEFENSE

Hon. **John M. Malloy**, Deputy Asst. Secretary of Defense (Procurement), Office of Asst. Secretary of Defense (Installations and Logistics), at Aerospace Industries Assn. Procurement and Finance Meeting, St. Louis, Mo., Oct. 22.

Gen. **Earle G. Wheeler**, Chairman of the Joint Chiefs of Staff, at Calvin Bullock Forum, New York City, Oct. 28.

Lt. Gen. **William J. Ely**, Deputy Director for Administration and Management, Office of Director of Defense Research and Engineering, at National Security Industrial Assn. R&D Symposium, Washington, D.C., Nov. 3.

Maj. Gen. **W. S. Steele**, USAF, Dep. Commandant, Industrial College of the Armed Forces, at Silver Anniversary Meeting, Academy of Management, New York, N. Y., Dec. 28.

ARMY

Gen. **Frank S. Besson, Jr.**, Commanding General, Army Materiel Command, at Meeting of Alamo Chapter, Assn. of the U.S. Army, San Antonio, Tex., Oct. 28.

Hon. **Willis M. Hawkins**, Asst. Secretary of the Army (Research and Development) at Dinner, Tour and Inspection of Nike-X, Western Electric, Burlington, N.C., Nov. 3–4; and at California Institute of Technology Seminar, "Army R&D," Los Angeles, Calif., Nov. 9–11.

Lt. Gen. **William F. Cassidy**, Chief of Engineers, at Fort Wood Chapter, Society of American Military Engineers, Dinner Meeting, Fort Leonard Wood, Kan, Nov. 9; and at National Reclamation Assn. Annual Meeting, Kansas City, Mo., Nov. 10.

NAVY

Dr. **J. P. Craven**, Chief Scientist, Special Projects Office, Bureau of Naval Weapons, at Stevens Institute of Technology, Hoboken, N.J., Oct. 26; and at National Conference to Develop Plans and Ideas for Implementing the Concept of "Sea Grant" Colleges, University of Rhode Island, Kingston, R.I., Oct. 28–29.

Hon. **Paul H. Nitze**, Secretary of the Navy, at Navy League Meeting, Long Beach, Calif., Oct. 27; at Roll-out of A–7A Corsair II Aircraft, Ling - Temco - Vought, Inc., Dallas, Tex., Nov. 2.

Vice Adm. **Paul H. Ramsey**, Deputy Chief of Naval Operations (Air), at Navy League Meeting, Baltimore, Md., Oct. 27.

Vice Adm. **I. J. Galantin**, Chief of Naval Materiel, at Ordnance Research Laboratory, Pennsylvania State University, College Park, Pa., Nov. 11–12; and at Ship Maintenance Conference, Naval Electronics Laboratory, San Diego, Calif., Dec. 15.

Rear Adm. **Levering Smith**, Dir., Special Projects Office, Bureau of Naval Weapons, at Annual Fall Seminar of Chapter 112, American Institute of Industrial Engineers, Green Bay, Wis., Nov. 17.

AIR FORCE

Hon. **Harold Brown**, Secretary of the Air Force, at Chamber of Commerce Meeting, Los Angeles, Calif., Nov. 3.

Hon. **Alexander Flax**, Asst. Secretary of the Air Force (Research and Development), at Space Electronics Symposium, Miami, Fla., Nov. 3.

Gen. **John P. McConnell**, Chief of Staff, at Air Technology Congress, Hot Springs, Ark., Nov. 17; and at Economic Club, Detroit, Mich., Dec. 6.

Administration of DOD Industrial Defense Program Assigned to Army

The Secretary of the Army has been assigned responsibility for administering the DOD Industrial Defense Program. This assignment is contained in DOD Directive 4160.54, "Department of Defense Industrial Defense Program," which was issued by the Deputy Secretary of Defense on June 26, 1965.

The directive delegates authority to the Secretary of the Army for designating "defense facilities," and for performing other functions assigned to the Secretary of Defense by section 5(b) of the Internal Security Act of 1950, as amended. Also, it assigns responsibility to the Army for determining the industrial facilities included in the DOD Key Facilities List. These responsibilities were assigned heretofore to the Assistant Secretary of Defense (Manpower).

In the past, each Military Department conducted industrial defense surveys of assigned key industrial facilities. Under the terms of the new directive, the Army will survey all facilities included in the program and will coordinate with the Navy, Air Force, or Defense Supply Agency when surveying those facilities in which these organizations have a contractual interest. The reassignment of these functions is intended to improve program effectiveness, promote operational efficiency and achieve economies in program administration.

The Army has announced that the authority to designate "defense facilities" has been redelegated to the Assistant Secretary of the Army (Installations & Logistics). The Deputy Chief of Staff for Logistics is assigned overall responsibility for managing the Industrial Defense Program and for determining the industrial facilities included in the DOD Key Facilities List.

The Army Provost Marshal General is responsible for providing technical guidance pertaining to the Industrial Defense Program. With the exception of a limited number of facilities which are surveyed under the direction of the Office of the Chief of Engineers or Headquarters, U. S. Army Materiel Command, responsibility for directing industrial defense surveys is assigned to Headquarters, U. S. Continental Army Command at Fort Monroe, Va. These surveys will be conducted under the supervision of the Provost Marshal of each of the U. S. Continental Armies.

The Industrial Defense Program is designed to encourage U. S. industry to protect its facilities from sabotage and other hostile or destructive acts. Primary emphasis is given to those production facilities, utilities and services which are of outstanding importance to national defense. With the consent and cooperation of industrial management, these facilities are surveyed annually. An assessment is made of the facility's vulnerability to these hazards and management is furnished guidance and technical assistance concerning the application of physical security and emergency preparedness measures for preventing or minimizing damage from such acts.

NOTES FOR EDITORS

Briefed below are some events and projects within the Department of Defense which may be of interest to writers and editors. If further information on any of these topics is desired, please write to Chief, Magazine and Book Branch, Office of Assistant Secretary of Defense (Public Affairs) Washington, D. C. 20301.

ELEVENTH ANNUAL DEEP FREEZE OPERATION BEGINS

Ski-equipped C-130 aircraft began arriving in Antarctica in September, heralding the beginning of the Navy's eleventh annual Operation Deep Freeze. Their arrival ended a seven-month period of isolation for over 280 scientists and Navy men at five U.S. stations on the South Polar continent. It was the first resupply mission since early March.

Deep Freeze is the Navy's logistic support program for the U.S. Antarctic Research Program, which is conducted under the auspices of the National Science Foundation. Support functions include transportation of personnel and supplies, replacement of equipment, construction and maintenance of facilities and field support of scientific expenditions.

Early in November three U.S. icebreakers will begin the annual icebreaking mission to clear the way for surface resupply by Military Sea Transportation Service ships.

ASTRONAUT PROPULSION UNIT UNDER EVALUATION

A simplified personal propulsion unit with fingertip controls designed to enable an astronaut to move about is being evaluated by the Aerospace Medical Research Laboratories at Wright-Patterson AFB, Ohio. The unstabilized device consists of a pair of hand-mounted propulsion nozzles with fore and aft thrust controls. Its power supply is carried in two high pressure gas bottles mounted in a backpack. The wearer controls his movements by aiming and activating the fingertip throttles. Additional control results from changing the position of his arms and by wrist movements.

Tests of the experimental units have already been carried out aboard Boeing KC-135 and Convair C-131B aircraft flying a parabolic arc to achieve brief periods of weightlessness. Some 25 flights are planned over a six month period to evaluate the operator's visual orientation in a simulated space field. During aircraft tests, dry nitrogen gas is used as the propellant. Under actual space conditions, a hot gas such as hydrogen periodide probably would be used.

LASER SURGICAL TOOL BEING BUILT BY ARMY

A unique Laser Surgical Tool is under fabrication by the Army Missile Command at Redstone Arsenal, Ala. The tool was developed by the Army in response to a request from the National Cancer Institute after more than a year's cooperative effort by the Missile Command's Laser experts and Institute cancer researchers.

Early experimentation at Redstone Arsenal involved exposure of both internal and external malignant growths in laboratory animals to pulses of infrared radiation from high energy Lasers and proved that they could destroy some cancer cells under certain circumstances. The Cancer Institute proposes to use the new surgical tool in a research program which might involve treatment of malignant tumors in human beings. However, its effectiveness in treating cancer in humans has not yet been established.

ARMY FIRES SUPERSONIC ANTI-TANK MISSILE

The Army has successfully fired a developmental model of its new supersonic anti-tank missile, the TOW. Center hits were scored on tank size targets more than a mile distant in tests. TOW gets its name from the description: Tube-launched, Optically-tracked, Wire-guided. It is the first supersonic missile guided in flight by a two-wire link between the launcher and the missile. Development of a simplified and highly accurate aiming device makes TOW a major improvement over present anti-tank missiles. The weapon is light enough to be carried by troops and can also be mounted on a variety of ground vehicles.

The TOW Missile System being readied for firing from a ground emplacement on a lightweight launcher mounted on a tripod. The heavy assault, anti-tank weapon also may be mounted on a variety of vehicles, including helicopters. The TOW system is managed by the U. S. Army Missile Command at Redstone Arsenal, Ala. (See last item, Notes for Editors.)

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Defense Procurement Circular No. 33, Aug. 25, 1965. Item 1. Termination of Authority to Qualify as Surety on Federal Bonds. Item 2. Section XX, Part 2—Uniform Procurement Instrument Identification Numbering System; Appendix N—Activity Address Numbers for use in conjunction therewith.

Defense Procurement Circular No. 34, Aug. 27, 1965. Role of the audit function in procurement.

Defense Procurement Circular No. 35, Aug. 30, 1965. Federal Excise Tax Reduction Act of 1965.

> Each Defense Procurement Circular (DPC) is designed to place new or changed policies or procedures in effect prior to publication of an Armed Services Procurement Regulation (ASPR) revision. The items in each circular are cancelled after six months, unless specifically eliminated earlier by a new DPC or by publication in the ASPR. ASPR subscribers will receive Defense Procurement Circulars and ASPR revisions through the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

Order AD 616 678N, Error Control for Digital Data Transmission over Telephone Networks. Mitre Corp., Bedford, Mass. for the Air Force, May 1965, 56 pp, $3.

Order AD 615 444N, Laser Meteorological Radar Study. Electro-Optical Systems, Inc., Passdena, Calif. for the Air Force, Jan. 1965, 93 pp, $3.

Order AD 617 776N, Transinformation of a Binary Underwater Acoustic Communication Channel Reflected from a Random Surface. University of Rhode Island for the Navy, May 1965, 38 pp, $2.

Order AD 616 773N, X-Ray Absorption in Dose-Equated Materials. AF Weapons Lab, Kirtland AFB, N. M. May 1965, 160 pp, $4.

Order PB 166 902N, Acoustic Navigation Systems. Bendix Corp., North Hollywood, Calif., for DOD, March 1964, 42 pp, $2.

Order AD 617 616N, Feasibility Study of Personnel Identification by Signature Verification. Rome Air Development Center, Griffiss AFB, N.Y. April 1965, 92 pp, $3.

Order 616 265N, Bibliography of Publications Relating to the Small Group, Third Edition. University of California for the Navy, April 1965, 243 pp, $6.

Order AD 615 485N, Studies of Burn Skin Protein: Immunoelectrophoretic Analysis of Proteins Extracted from Burned Skin. Medical College of Virginia, Richmond, for the Defense Atomic Support Agency, April 1965, 26 pp, $2.

Order AD 617 721N, An Introduction to the Geology of the Moon. Air Force Cambridge Research Labs, May 1965, 38 pp, $2.

Order AD 615 790N, Experimental Study of Longshore Currents on a Plane Beach. Army Costal Engineering Research Center, Washington, D.C., Jan. 1965, 88 pp, $3.

Order PNE–242FN, The Sedan Event. Army Corps of Engineers and Lawrence Radiation Lab, Livermore, Calif., for the AEC, April 1965, 103 pp, $4.

Order AD 617, 686N, Some Aspects of FM Design for Line-of-Sight Microwave and Troposcatter Systems. Rome Air Development Center, Griffiss AFB, N.Y. April 1965, 197 pp, $5.

Order AD 617 717N, Fabry-Perot Type Laser Modulators. Naval Ordnance Test Station, China Lake, Calif. April 1965, 45 pp, $2.

Order 617 751N, A Technique for Achieving Very High Antenna Gain —The Adaptively Phased Array. Rome Air Development Center, Griffiss AFB, N.Y. June 1965, 47 pp, $2.

Order AD 619 025N, Discussion of Dropout Criteria for Magnetic Tape. Pacific Missile Range, Point Mugu, Calif. Aug. 1965, 11 pp, $1.

Order AD 616 275N, Pseudo-Random DOT Scan Television Systems. Polytechnic Institute of Brooklyn for the Air Force, Dec. 1964, 53 pp, $3.

Order AD 616 126N, An Easy Way to Determine the Shape of a Driving Function from the Response of a Linear System, Army Harry Diamond Laboratories, Washington, D.C., April 1965, 20 pp, $1.

> Government research and development reports are available to science and industry at:
>
> Clearinghouse for Federal and
> Scientific Information
> Department of Commerce
> Springfield, Va. 22151

Navy Data List Available

The Department of the Navy has available for distribution the Navy Authorized Data List prepared in military handbook format. Identified as MIL-HDBK-222(NAVY), dated July 8, 1965, this document is a master list encompassing every significant technical data requirement (drawings, logistics data, contractors-reports, etc.) which may be procured under Navy contract.

Listed are almost 7,000 discrete data items for which Navy activities have established a need. In its present format, all data items are indexed to specific paragraphs in military specifications and related documents which call for data. This permits ready identification of selected data items on the "Contract Data Requirements List," DD Form 1423, supporting specific procurements.

Navy spokesmen say that the concept employed thoroughly supports the Defense Standardization Program as well as the DOD Configuration Management effort.

Copies of MIL-HDBK-222(NAVY) can be obtained from the Commanding Officer, U. S. Naval Supply Depot, 5801 Tabor Avenue, Philadelphia, Pa.

Change to TD–1 Directory Available

An amendment to the Directory of DOD Engineering Drawing Repositories (TD-1) has been issued and is available to industry. The directory provides a reference aid to DOD activities and other Government agencies which require copies of engineering drawings in the accomplishment of their assigned missions.

It may also be used as a guide by defense contractors in these cases where terms of contracts or other agreements with procurement or contracting offices have authorized contractors to draw directly upon repositories for drawings required in the performance of contracts.

Copies of the directory may be obtained from the Naval Supply Depot, 5801 Tabor Avenue, Philadelphia, Pa.

Department of Defense
Prime Contract Awards by State

Table 1. Net Value of Military Procurement Actions[a]

Fiscal Years 1964 and 1965

(Amounts in Thousands)

	Fiscal Year				Current Quarter			
	July 1963 — June 1964		July 1964 — June 1965		April — June 1964		April — June 1965	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
TOTAL U. S.[b]	$27,470,379		$26,631,100		$8,053,830		$8,864,745	
NOT DISTRIBUTED BY STATE[c]	3,053,272		3,363,052		885,560		1,102,783	
STATE TOTALS[d]	24,417,107	100.0%	23,268,057	100.0%	7,168,270	100.0%	7,761,962	100.0%
Alabama	100,681	0.8	165,176	0.7	45,867	0.6	46,431	0.6
Alaska	101,545	0.4	74,175	0.3	41,445	0.6	19,205	0.2
Arizona	173,825	0.7	176,867	0.8	46,147	0.6	69,962	0.9
Arkansas	29,731	0.1	39,284	0.2	7,477	0.1	9,990	0.1
California	5,100,650	21.0	5,153,635	22.1	1,405,338	19.6	1,550,282	20.0
Colorado	389,511	1.6	249,547	1.1	100,765	1.4	66,113	0.9
Connecticut	1,126,054	4.6	1,179,715	5.1	323,185	4.5	383,081	4.9
Delaware	30,424	0.1	38,239	0.2	5,025	0.1	12,678	0.2
District of Columbia	222,947	0.9	244,108	1.0	67,928	0.9	78,190	1.0
Florida	782,591	3.2	633,332	2.7	120,231	1.8	103,363	1.3
Georgia	520,169	2.1	662,417	2.8	334,173	4.7	169,718	2.2
Hawaii	52,112	0.2	72,214	0.3	21,636	0.3	22,165	0.3
Idaho	7,804	*	11,724	0.1	2,956	*	4,271	0.1
Illinois	420,201	1.8	421,809	1.8	153,402	2.2	178,892	2.3
Indiana	537,940	2.2	604,925	2.6	212,396	3.0	309,462	4.0
Iowa	103,392	0.4	133,951	0.6	46,305	0.6	49,386	0.6
Kansas	289,045	1.2	229,051	1.0	83,697	1.2	33,676	0.4
Kentucky	40,476	0.2	42,749	0.2	9,150	0.1	11,600	0.1
Louisiana	181,427	0.7	256,834	1.1	10,451	0.1	22,565	0.3
Maine	31,531	0.1	68,771	0.3	10,600	0.1	8,030	0.1
Maryland	547,936	2.3	584,212	2.5	211,483	3.0	211,341	2.7
Massachusetts	1,032,062	4.2	1,178,728	5.1	322,477	4.5	397,382	5.1
Michigan	591,290	2.4	532,896	2.3	194,014	2.7	196,152	2.5
Minnesota	217,941	0.9	259,590	1.1	84,116	1.2	109,677	1.4
Mississippi	155,911	0.6	152,188	0.7	29,780	0.4	66,518	0.9
Missouri	1,349,071	5.5	1,060,781	4.6	73,822	1.0	630,264	8.1
Montana	16,422	0.1	60,375	0.3	4,537	0.1	7,725	0.1
Nebraska	33,921	0.1	42,708	0.2	5,505	0.1	9,866	0.1
Nevada	6,361	*	19,142	0.1	2,196	*	5,792	0.1
New Hampshire	64,867	0.3	52,400	0.2	19,278	0.3	13,797	0.2
New Jersey	917,561	3.8	820,309	3.5	314,430	4.4	266,778	3.4
New Mexico	71,486	0.3	84,137	0.4	17,800	0.2	30,565	0.4
New York	2,496,438	10.2	2,229,471	9.6	917,106	12.8	1,002,664	12.9
North Carolina	273,516	1.1	288,408	1.2	95,487	1.3	63,353	0.8
North Dakota	192,025	0.8	48,097	0.2	7,400	0.1	10,160	0.1
Ohio	1,028,946	4.2	863,112	3.7	287,822	4.0	340,284	4.4
Oklahoma	122,489	0.5	119,802	0.5	18,769	0.3	20,082	0.3
Oregon	29,104	0.1	39,624	0.2	9,130	0.1	14,531	0.2
Pennsylvania	883,065	3.6	988,810	4.2	354,928	5.0	326,474	4.2
Rhode Island	38,173	0.2	86,323	0.4	19,297	0.3	17,805	0.2
South Carolina	51,621	0.2	81,580	0.4	19,057	0.3	17,272	0.2
South Dakota	23,308	0.1	21,062	0.1	3,557	*	3,695	0.1
Tennessee	193,564	0.8	197,283	0.8	62,312	0.9	35,239	0.5
Texas	1,294,431	5.3	1,446,769	6.2	224,443	3.1	315,624	4.1
Utah	340,040	1.4	191,173	0.8	110,751	1.6	45,733	0.6
Vermont	14,012	0.1	32,202	0.1	7,670	0.1	14,056	0.2
Virginia	690,852	2.8	472,583	2.0	382,557	5.3	175,020	2.3
Washington	1,085,696	4.5	545,607	2.3	226,447	3.2	139,036	1.8
West Virginia	87,327	0.4	90,312	0.4	18,478	0.3	62,996	0.8
Wisconsin	177,217	0.7	203,003	0.9	58,434	0.8	60,215	0.8
Wyoming	40,408	0.2	7,867	*	8,905	0.1	1,037	*

For Footnotes see Page 25.
* Less than 0.06%

Table 2. NET VALUE OF MILITARY PROUREMENT ACTIONS BY DEPARTMENT[a]

July 1964–June 1965

(Amounts in Thousands)

State	Total		Army	Navy	Air Force	Defense Supply Agency	Other Defense Agencies[e]
	Amount	Percent					
TOTAL U. S.[b]	$26,631,109		$5,504,213	$8,789,451	$9,387,385	$2,701,725	$248,335
NOT DISTRIBUTED BY STATE[c]	3,363,052		702,383	899,192	1,063,809	596,851	10,817
STATE TOTALS[d]	23,268,057	100.0%	4,711,830	7,890,259	8,323,576	2,104,874	237,518
Alabama	165,176	0.7	67,538	34,313	34,363	28,962	0
Alaska	74,175	0.3	25,898	8,653	29,131	10,472	21
Arizona	176,857	0.8	49,792	33,361	91,643	2,061	0
Arkansas	39,284	0.2	18,609	961	5,803	13,911	0
California	5,153,635	22.1	490,962	1,793,653	2,540,999	314,209	13,812
Colorado	249,547	1.1	31,999	4,796	196,379	15,898	475
Connecticut	1,179,715	5.1	116,785	785,869	257,039	19,914	108
Delaware	38,239	0.2	4,596	9,838	14,498	9,307	0
District of Columbia	244,108	1.0	66,660	93,652	65,430	1,677	16,689
Florida	633,332	2.7	257,079	65,395	278,864	31,994	0
Georgia	662,417	2.8	65,523	14,702	546,371	35,821	0
Hawaii	72,214	0.3	20,950	41,130	5,149	4,907	78
Idaho	11,724	0.1	1,667	135	1,242	8,680	0
Illinois	421,899	1.8	143,081	113,362	73,842	88,840	2,774
Indiana	604,925	2.6	343,034	102,147	107,160	51,571	1,013
Iowa	133,951	0.6	31,903	38,325	35,969	27,747	7
Kansas	229,051	1.0	25,640	3,953	173,872	25,581	5
Kentucky	42,749	0.2	25,858	2,364	3,151	11,376	0
Louisiana	255,834	1.1	15,385	104,404	6,403	129,642	0
Maine	68,771	0.3	4,850	51,426	6,931	5,564	0
Maryland	584,212	2.5	100,689	292,168	167,082	21,477	1,896
Massachusetts	1,178,728	5.1	242,986	425,767	449,284	57,063	3,628
Michigan	532,896	2.3	348,357	53,483	93,185	35,983	1,888
Minnesota	259,590	1.1	67,288	102,045	58,875	31,382	0
Mississippi	152,188	0.7	60,692	62,400	9,730	19,366	0
Missouri	1,060,781	4.6	120,297	844,310	78,491	17,118	565
Montana	69,375	0.3	51,604	915	14,158	2,698	0
Nebraska	42,708	0.2	3,839	3,181	21,312	14,376	0
Nevada	19,142	0.1	3,075	1,515	14,424	128	0
New Hampshire	52,400	0.2	2,061	30,772	3,529	16,038	0
New Jersey	820,309	3.5	207,270	213,061	295,859	100,258	3,861
New Mexico	84,137	0.4	51,762	3,598	27,444	1,333	0
New York	2,229,471	9.6	277,658	957,111	632,096	184,824	176,882
North Carolina	288,408	1.2	172,313	36,289	19,107	60,095	604
North Dakota	48,997	0.2	11,661	22	34,794	2,520	0
Ohio	863,112	3.7	197,673	260,197	337,930	66,340	972
Oklahoma	119,802	0.5	16,511	8,295	57,937	37,010	49
Oregon	39,624	0.2	2,055	14,245	7,051	16,273	0
Pennsylvania	988,810	4.2	271,223	319,185	281,684	110,297	6,421
Rhode Island	86,323	0.4	8,952	47,079	3,422	25,485	1,385
South Carolina	81,580	0.4	23,007	28,678	4,737	25,158	0
South Dakota	21,062	0.1	5,072	408	14,309	1,273	0
Tennessee	197,283	0.8	57,025	23,387	67,705	49,166	0
Texas	1,446,769	6.2	322,193	236,230	645,562	242,784	0
Utah	191,173	0.8	19,137	2,480	154,816	14,740	0
Vermont	32,202	0.1	26,920	1,293	2,556	1,424	0
Virginia	472,583	2.0	96,707	203,815	45,002	32,674	4,385
Washington	545,607	2.3	20,164	268,073	227,904	28,866	0
West Virginia	90,312	0.4	58,010	12,692	5,555	14,055	0
Wisconsin	203,003	0.9	51,604	44,317	75,603	31,479	0
Wyoming	7,867	*	6,207	209	(–) 3,606	5,057	0

For Footnotes, see Page 25.

* Less than 0.05%

Table 3. NET VALUE OF MILITARY PROCUREMENT ACTIONS BY FISCAL YEAR[a]

Fiscal Years 1963, 1964 and 1965

(Amounts in Thousands)

	Fiscal Year 1963		Fiscal Year 1964		Fiscal Year 1965	
	Amount	Percent	Amount	Percent	Amount	Percent
TOTAL, U. S.[b]	$28,107,882		$27,476,379		$26,631,109	
NOT DISTRIBUTED BY STATE[c]	2,874,642		3,053,272		3,363,052	
STATE TOTALS[d]	25,233,240	100.0%	24,417,107	100.0%	23,268,057	100.0%
Alabama	194,990	0.8	190,681	0.8	165,176	0.7
Alaska	103,476	0.4	101,545	0.4	74,175	0.3
Arizona	285,751	1.1	173,825	0.7	176,867	6.8
Arkansas	39,114	0.2	29,731	0.1	39,284	0.2
California	5,835,670	23.1	5,100,650	21.0	5,163,635	22.1
Colorado	444,196	1.8	389,511	1.6	249,547	1.1
Connecticut	1,048,449	4.2	1,126,054	4.6	1,179,716	6.1
Delaware	47,483	0.2	30,424	0.1	38,239	0.2
District of Columbia	238,120	0.9	222,947	0.9	244,108	1.0
Florida	683,237	2.3	782,591	3.2	633,332	2.7
Georgia	423,290	1.7	520,169	2.1	662,417	2.8
Hawaii	45,206	0.2	52,112	0.2	72,214	0.3
Idaho	8,634	*	7,804	*	11,724	0.1
Illinois	486,067	1.9	429,201	1.8	421,899	1.8
Indiana	486,759	1.9	537,940	2.2	664,925	2.6
Iowa	130,406	0.5	103,392	0.4	133,951	0.6
Kansas	331,687	1.3	289,046	1.2	229,051	1.0
Kentucky	55,725	0.2	40,476	0.2	42,749	0.2
Louisiana	195,341	0.8	181,427	0.7	255,834	1.1
Maine	58,409	0.2	31,531	0.1	68,771	0.3
Maryland	666,365	2.4	547,936	2.3	684,212	2.5
Massachusetts	1,060,165	4.2	1,032,062	4.2	1,178,728	5.1
Michigan	633,047	2.5	591,296	2.4	532,896	2.3
Minnesota	273,757	1.1	217,941	0.9	259,690	1.1
Mississippi	186,039	0.7	155,911	0.6	152,188	0.7
Missouri	686,111	2.7	1,349,071	6.5	1,060,781	4.6
Montana	79,349	0.3	16,422	0.1	69,375	0.3
Nebraska	33,559	0.1	33,921	0.1	42,708	0.2
Nevada	13,143	0.1	6,361	*	10,142	0.1
New Hampshire	61,174	0.2	64,867	0.3	62,400	0.2
New Jersey	1,261,608	5.0	917,561	3.8	820,309	3.5
New Mexico	61,642	6.2	71,486	0.3	84,137	0.4
New York	2,600,146	9.9	2,496,438	10.2	2,229,471	9.6
North Carolina	258,987	1.0	273,516	1.1	288,408	1.2
North Dakota	64,866	0.3	192,026	6.8	48,097	0.2
Ohio	1,346,686	5.3	1,028,946	4.2	863,112	3.7
Oklahoma	111,204	0.6	122,489	0.6	119,802	0.5
Oregon	41,777	0.2	29,104	0.1	39,624	0.2
Pennsylvania	887,452	3.5	883,066	3.6	988,810	4.2
Rhode Island	46,970	0.2	38,173	0.2	86,323	0.4
South Carolina	57,747	0.2	51,621	0.2	81,680	0.4
South Dakota	80,630	0.3	23,308	0.1	21,062	0.1
Tennessee	183,478	0.7	193,564	0.8	197,283	0.8
Texas	1,203,123	4.8	1,294,431	5.3	1,446,769	6.2
Utah	427,679	1.7	340,040	1.4	191,173	0.8
Vermont	12,258	0.1	14,012	0.1	32,202	0.1
Virginia	484,989	1.9	690,852	2.8	472,583	2.0
Washington	1,041,581	4.1	1,086,696	4.5	646,607	2.3
West Virginia	162,201	0.7	87,327	0.4	90,312	0.4
Wisconsin	219,427	0.9	177,217	0.7	203,003	0.9
Wyoming	126,081	0.6	49,408	0.2	7,867	*

For Footnotes, see Page 25.

* Less than 0.05%

Footnotes
DOD Prime Contract Award

Footnotes.

[a] See Notes on Coverage, below.

[b] Includes all contracts awarded for work performance in the United States. The United States includes the 50 states, the District of Columbia, U. S. possessions, the Canal Zone, the Commonwealth of Puerto Rico and other areas subject to the complete sovereignty of the U. S., but does not include occupied Japanese Islands and Trust Territories.

[c] Includes contracts of less than $10,000, all contracts awarded for work performance in the Commonwealth of Puerto Rico, U. S. possessions and other areas subject to the complete sovereignty of the U. S., contracts which are in a classified location and any intragovernmental contracts entered into overseas.

[d] Net value of contracts of $10,000 or more for work in each state and the District of Columbia.

[e] Procurement by two Department of Defense Agencies: Defense Communications Agency and Office of the Secretary of Defense. These are included in the procurement statistics series for the first time during Fiscal Year 1963.

[f] Revised.

Notes on Coverage.

It is emphasized that data on prime contracts by state do not provide any direct indication as to the state in which the actual production work is done. For the majority of contracts with manufacturers, the data reflect the location of the plant where the product will be finally processed and assembled. If processing or assembly is to be performed in more than one plant of a prime contractor, the location shown is the plant where the largest dollar amount of work will take place. For purchases from wholesale or other distribution firms, the location is the address of the contractor's place of business. For service contracts, the location is generally the place where the service is performed, but for transportation and communications services the home office address is frequently used.

More important is the fact that the reports refer to prime contracts only and cannot in any way reflect the distribution of the very substantial amount of material and component fabrication and other subcontract work that may be done outside the state where final assembly or delivery takes place.

The report includes definitive contracts and funded portions of letter contracts and letters of intent, job orders, task orders and purchase orders on industrial firms, and also includes those made through the General Services Administration. The state data include upward or downward revisions and adjustments of $10,000 or more, such as cancellations, price changes, supplemental agreements, amendments, etc.

The estimated amounts of indefinite delivery, open-end, or call type contracts for petroleum are included in the report. Except for petroleum contracts, the report does not include indefinite delivery, open-end, or call type contracts as such but does include specific purchase or delivery orders of $10,000 or more which are placed against these contracts. Also excluded from the report are project orders, that is production orders issued to Government-owned-and-operated facilities such as Navy shipyards. However, the report includes the contracts placed with industry by the Government-operated facility to complete the production order.

Deep Ocean Engineering

(*Continued from Page 8*)

techniques, is that of placing and operating a nuclear power plant on the sea floor in depths as great as 20,000 feet.

For study purposes we are using a 3MW(e) nuclear thermo-electric power plant designed by Westinghouse Electric Corporation and the Atomic Energy Commission for the Office of Naval Research about five years ago. The plant, as designed, weighs about 300,000 pounds and is 46 feet high, with a maximum diameter of 20 feet. It would operate unattended for perhaps two years. Today a smaller plant could be designed for the same power output.

The study includes how to install it, how heat transfer might be affected by the ocean environment and whether or not fouling would interfere with the plant.

The effort has been carried out by two contractors. The Bechtel Corporation of San Francisco, Calif., has been studying the problem of placing and handling the reactor. The problems of heat transfer and fouling are being studied by C. F. Braun & Company of Alhambra, Calif.

One study visualizes an "installation sub-system," consisting of a bottom weight, the power plant and a buoyant element, all to be lowered from a center well of a ship or barge which contains the hoisting apparatus. The buoyancy element is calculated to be 35 feet high and 26 feet in diameter. It is to be made from a foam.

In an alternate system, a doughnut-shaped submersible, with the axis of the toroid in the horizontal plane, is employed. This submersible design would permit rapid transit in the vertical direction which is important for the work objective.

The experiments to measure heat plumes, heat-transfer co-efficients and fouling effects in water as deep as 6,000 feet will be completed in December 1965. Measurement of heat transfer coefficients and fouling in shallow water, the first experimental step, was begun at San Diego.

In order to make this work meaningful to those who must design or build in the ocean, we have undertaken the preparation of an engineering manual for underwater construction. This is based on existing knowledge and will be updated as significant advances in technology occur.

NCEL's future plans appear in the report of the Undersea Technology Panel—Project Seabed. These plans continue to be aimed at developing the technology required to build structures on the sea floor.

NCEL Port Hueneme recognizes an urgent need for the perfection of in situ soil evaluation, new design methods involving settlement predictions, understanding of materials behavior in the deep ocean environment and development anchorage and foundation systems.

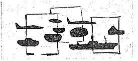
Munitions Export Control

(*Continued from Page* 6)

on March 1, 1965, the Defense Industrial Security Clearance Office (DISCO) has made considerable changes to better accommodate the needs of industry for more expeditious personnel clearance actions related to contractor visits overseas in connection with export sales. Personnel of that office have worked with us most cooperatively and will further review the requirements of contractor representatives here and abroad in addition to visiting the Military Assistance Advisory Groups and military attaches overseas to obtain a better picture of what is needed in this area.

We hope the foregoing has provided industry with an indication of our joint responsibility in these tasks which require specific additional study and interest on the part of U. S. Government agencies and individual corporations if the problems they present are to be solved to our mutual advantage.

From a military security standpoint, we must remember that the advantage to a foreign government, whose interest might be inimical to the United States, is not confined to a knowledge of political trends and policy on military strategic plans and tactics but also to gathering the industrial "know-how" to produce the superior weapon.



DEFENSE PROCUREMENT

Contracts of $1,000,000 and over awarded during Month of September 1965:

DEFENSE SUPPLY AGENCY

3—**Metropolitan Petroleum Co.**, New York City, $2,310,600. 240,000 barrels of Navy special fuel oil and 850,000 barrels of #6 bunker fuel oil. Defense Fuel Supply Center, Alexandria, Va.

7—**Riegel Textile Corp.**, New York City. $2,845,596. 4,826,880 yards of cotton sateen cloth. Trion and Scottdale, Ga., and Enoree S.C. Defense Personnel Support Center, Philadelphia.

—**Nantex Riviera Corp.**, New York City. $2,182,158. Men's cotton shorts. Greenwood, S.C. Defense Personnel Support Center, Philadelphia.

8—**Callaway Mills**, La Grange, Ga. $2,800,456. 1,500,000 yards of ballistic nylon cloth. La Grange. Defense Personnel Support Center, Philadelphia.

—**Putnam Mills**, New York City. $1,808,710. 891,000 yards of ballistic nylon cloth. Laurens, S.C.; Winnsboro, S.C.; Rhodhiss, N.C.; Shawmut, Ala. and Rockville, Conn. Defense Personnel Support Center, Philadelphia.

—**J. P. Stevens & Co.**, New York City. $4,104,455. 4,210,000 yards of cotton twill cloth. Great Falls and Wallace, S.C. Defense Personnel Support Center, Philadelphia.

—**Burlington Industries**, New York City. $2,309,405. 2,275,000 yards of cotton twill cloth. Cramerton, N.C. Defense Personnel Support Center, Philadelphia.

9—**Valley Metallurgical Processing Co.**, Essex, Conn. $1,392,038. 11,381 drums of magnesium powder. Defense General Supply Center, Richmond, Va.

—The Defense Personnel Support Center, Philadelphia, has issued the following contracts to firms in New York City for cotton sateen cloth: Riegel Textile Corp., $3,736,683. 7,057,000 yds.; C. M. London Co., $2,169,706. 4,156,000 yds.; Prestex, Inc., $1,884,953. 3,450,000 yds.; R. G. Colton, $1,003,030. 1,023,500 yds.; J. P. Stevens & Co., $3,430,625. 6,661,000 yds.

13—**United States Steel**, Cincinnati, Ohio. $1,540,934. 226,200 spools of barbed wire. Pittsburg, Calif.; Joliet, Ill.; Duluth, Minn.; Fairfield, Ala.; and Donora, Pa. Defense Construction Supply Center, Columbus, Ohio.

14—The Defense Personnel Support Center, Philadelphia, has issued the following contracts for wool blankets: Burlington Industries, Cleveland, Tenn. $2,369,000. 300,000 blankets; Fieldcrest Mills, New York City. $1,185,500. 150,000 blankets; J. P. Stevens and Co., New York City. $1,203,594. 173,520 blankets.

15—**Prestex, Inc.**, New York City. $1,319,250. 750,000 yards of wind-resistant, water-repellent, cotton oxford cloth. Westerly, R.I., and Lewiston, Maine. Defense Personnel Support Center, Philadelphia.

—**U.S. Rubber Co.**, Providence, R.I. $1,729,600. 2,300 five-hundred-gallon collapsible fabric drums. Defense General Supply Center, Richmond, Va.

16—**Pettibone-Mulliken Corp.**, Chicago. $1,544,340. 84 diesel powered fork lift trucks. Defense General Supply Center, Richmond, Va.

17—**Wanda Petroleum Co.**, Houston, Tex. $1,685,851. 19,000,000 gallons of JP-4 jet fuel. Defense Fuel Supply Center, Alexandria, Va.

20—**Richfield Oil Corp.**, Los Angeles. $1,182,125. 612,500 barrels of fuel oil. Defense Fuel Supply Center, Alexandria, Va.

21—**Waterbury Button Co.**, Waterbury, Conn. $1,151,692. Gold plate finish metal buttons for uniforms. Defense Personnel Support Center, Philadelphia.

22—**Hyster Co.**, Portland, Ore. $1,631,446. 141 gasoline fork lift trucks. Defense General Supply Center, Richmond, Va.

—**Lockheed Aircraft Corp.**, Marietta, Ga. $1,124,214. 1,173 palletized cargo trailers. Defense General Supply Center, Richmond, Va.

—**Dow Chemical Co.**, Midland, Mich. $1,593,000. 360,000 gallons of herbicide. Defense General Supply Center, Richmond, Va.

23—**Coastal States Petrochemical Co.**, Houston, Tex. $2,034,930. 34,600,000 gallons of jet fuel. Defense Fuel Supply Center, Alexandria, Va.

24—**Phalo Corp.**, Shrewsbury, Mass. $2,073,517. 47,680 reels of telephone cable. Defense Industrial Supply Center, Philadelphia.

—**J. P. Stevens & Co., Inc.**, New York City. $3,802,200. 1,050,000 yards of wool serge cloth. Defense Personnel Support Center, Philadelphia

29—**Kings Point Industries**, New York City. $1,059,084. 379,600 pairs of men's cotton uniform twill trousers. Defense Personnel Support Center, Philadelphia.

—**Putnam Mills Corp.**, New York City. $2,979,135. 9,747,208 linear yards of nylon cloth netting. Defense Personnel Support Center, Philadelphia.

—**West Point-Pepperell, Inc.**, New York City. $1,116,500. 1,250,000 yards of cotton duck cloth. Defense Personnel Support Center, Philadelphia.

30—**Republic Steel Corp.**, Chicago $2,405,530. Eighty-rod spools of barbed wire. Alabama City, Ala. Defense Construction Supply Center, Columbus, Ohio.

ARMY

1—**Hughes Aircraft**, Culver City, Calif. $5,837,378. Continuation of research and development on the TOW (a heavy anti-tank assault weapon) system. Tucson, Ariz. and Culver City. Los Angeles Procurement District, Pasadena, Calif.

—**Goodyear Tire & Rubber Co.**, Akron, Ohio. $2,044,271. 2½-ton trucks, Gadsden, Ala. Army Tank Automotive Center (AMC), Warren, Mich.

—**Baldwin-Lima-Hamilton Corp.**, Philadelphia. $3,501,961. Design, manufacture and delivery of three hydraulic turbines to the Cordell Hull Dam and Reservoir Project, Carthage, Tenn. Eddystone, Pa. Engineer District, Nashville, Tenn.

—**G. L. Tarlton Contracting Co. and W. L. Hiley & Co.**, St. Louis. $5,399,737. Work on St. Louis Flood Protection Project. Engineer District, St. Louis.

—**Hercules Engine Div. of Hupp Corp.**, Canton, Ohio. $1,430,871. Multi-fuel engine assemblies and containers for 2½ and 5-ton tactical trucks. Canton. Army Tank Automotive Center (AMC), Warren, Mich.

2—**Franklin Contracting Co.**, Williamstown, N.J. $1,080,146. Work on Chesapeake and Delaware Canal Project. St. George, Del. Engineer District, Philadelphia.

3—**Philco Corp.**, Philadelphia. $6,564,000. Engineering and personnel services related to an integrated communications system in an overseas area. Electronics Command (AMC), Philadelphia.

—**Page Communications Engineers, Inc.**, Washington, D.C. $5,760,000. Engineering and personnel services related to an integrated communications system in an overseas area. Electronics Command (AMC), Fort Monmouth, N.J.

—**Baldwin-Lima-Hamilton Corp.**, Philadelphia. $11,557,380. Design, manufacture and delivery of nine hydraulic turbines (three for the Lower Granite Lock and Dam, Washington, Project; and six for the John Day Lock and Dam, Oregon, Project). Eddystone, Pa. Engineer District, Walla Walla, Wash.

—**Otis Elevator Co.**, Brooklyn, N.Y. $1,401,452. Evaluation of technical data and production of M16 ballistic computer for the M60 tank. Frankford Arsenal, Philadelphia.

—**Chris Berg. Inc.**, Seattle, Wash. $3,347,000. Construction of a single story hospital with associated kitchen and laundry facilities. Valdez, Alaska. Alaska Engineer District, Anchorage, Alaska.

—**Creighton, Ernst and Wallace**, Nashville, Tenn. $7,357,000. Rehabilitation of facilities at the Volunteer Army Ammunition Plant. Chattanooga, Tenn. Engineer District, Mobile, Ala.

7—**B-E-C-K and Raber-Kief**, Seattle, Wash. $1,354,020. Construction of an aircraft hangar and associated facilities at Fort Richardson, Alaska. Alaska Engineer District, Anchorage, Alaska.

8—**H. Earl Parker, Inc.**, Marysville, Calif. $1,112,235. Work on Sacramento River Bank Project. Marysville. Engineer District, Sacramento, Calif.

—**General Electric**, Burlington, Vt. $2,103,563. Design and development of an armament subsystem for the 30mm automatic gun to be used on UH-1B helicopters. Springfield Armory, Springfield, Mass.

9—**General Motors**, Indianapolis, Ind. $4,428,768. Engines for light observation helicopters. Army Aviation Materiel Command (AMC), St. Louis.

10—**Goodyear Tire & Rubber Co.**, Akron, Ohio. $2,082,500. Truck tires. Gadsden, Ala. Army Tank Automotive Center (AMC). Warren, Mich.

—**Mason & Hanger**, Lexington, Ky. $6,141,274. Ordnance items. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Bell Helicopter Co.**, Fort Worth, Tex. $50,000,000. UH-1 IROQUOIS helicopters. Hurst, Tex. Army Aviation Command (AMC), St. Louis.

13—**Firestone Tire & Rubber Co.**, Akron, Ohio. $4,461,113. Track assemblies for M60 tanks. Noblesville, Ind. Army Tank Automotive Center (AMC), Warren, Mich.

—**Park Construction Co.**, Minneapolis, Minn. $1,200,827. Work on Winona, Minn., Local Flood Protection Project. Engineer District. St. Paul. Minn.

—**R.C.A.**, Burlington, Mass. $7,753,452. Design, documentation, fabrication and testing of multi-system test equipment for the SHILLELAGH, LANCE and TOW missile systems. Army Missile Command (AMC), Huntsville, Ala.

—**Cadillac Gage Co.**, Warren, Mich. $3,250,000. 190 armored commando cars. Army Tank Automotive Center (AMC), Warren, Mich.

—**Goodyear Tire & Rubber Co.**, Akron, Ohio. $5,850,265. Track assemblies for M60 tanks. Muncie, Ind. Army Tank Automotive Center (AMC), Warren, Mich.

14—**Collins Radio Co.**, Richardson, Tex. $1,290,000. Radio terminal sets. Army Tank Automotive Center (AMC), Warren. Mich.

—**Allen Campbell Co.**, Tyler, Tex. $2,110,200. Construction of a composite medical facility at Holloman AFB, N.M. Engineer District, Albuquerque, N.M.

—**General Electric**, Syracuse, N.Y. $1,142,000. Acquisition of radar for NIKE HERCULES. Army Missile Command (AMC), Huntsville, Ala.

—**General Electric**, Oklahoma City, Okla. $2,970,381. Design, manufacture, delivery and installation and test of four generators for the Robert S. Kerr Lock and Dam Project, Schenectady, N.Y. Engineer District, Tulsa, Okla.

15—**Westinghouse Electric**, Portland, Ore. $4,927,441. Design, manufacture, test and delivery of 18 transformers and accessories for the John Day, Little Goose, and Lower Granite Locks and Dam Projects. Muncie, Ind. Engineer District, Walla Walla, Wash.

—**Radiation, Inc.**, Melbourne, Fla. $7,175,356. Development and fabrication of satellite communication terminals (AN/TSC-54) for the Satellite Communication Agency. Army Electronics Command, Fort Monmouth, N.J.

—**Colt's Inc.**, Hartford, Conn. $2,072,491. AR-15 rifles with one 20-round magazine. Army Weapons Command (AMC), Rock Island, Ill.

—**Reeves Instrument Co.**, Garden City, N.Y. $1,152,394. Fuze parts. Harry Diamond Laboratory, Washington, D.C. Ammunition Plant, New Brighton, Minn. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

16—**Bell Helicopter Co.**, Fort Worth, Tex. $9,238,956. Components and spare parts for UH-1 helicopters. Army Aviation Materiel Command (AMC), St. Louis.

—**Federal Cartridge Corp.**, Minneapolis, Minn. $2,252,016. Maintenance and support services. Twin Cities Army Ammunition Plant, New Brighton, Minn. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

17—**Bowen-McLaughlin-York**, York, Pa. $2,537,594. 8-inch howitzers (M110) and recovery vehicles (M578). Army Tank Automotive Center (AMC), Warren, Mich.

—**S. S. Mullen, Inc.**, Seattle, Wash. $3,709,126. Work on John Day Lock and Dam Project, Benton County, Wash. Engineer District, Walla Walla, Wash.

—**Chamberlain Corp.**, Scranton, Pa. $4,191,292. 155mm projectiles. Scranton. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**American Machine & Foundry Co.**, Brooklyn, N.Y. $8,176,450. Plant equipment and production of ordnance items. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

21—**Bell Helicopter Co.**, Fort Worth, Tex. $1,763,712 and $1,396,789. UH-1 helicopter components (drive shaft assemblies and blade assemblies). Army Aviation Materiel Command (AMC), St. Louis.

—**Olin Mathieson Chemical Corp.**, New York City. $1,824,013. Maintenance services at Badger Army Ammunition Plant, Baraboo, Wis. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

22—**Batesville Mfg. Co.**, Batesville, Ark. $4,457,035. Ordnance items. Batesville. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Harvill Corp.**, Compton, Calif. $1,454,088. Ordnance items. Washington, Ind. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Western Electric Co.**, New York City. $12,105,400. NIKE X production engineering and production planning. Burlington, N.C. and Allentown, Pa. NIKE X Project Office, Redstone, Ala.

23—**Rockwell-Standard Corp.**, Detroit, Mich. $1,606,395. Transmission assemblies for 2½-ton trucks. Oshkosh, Wis. Army Tank Automotive Center (AMC), Warren, Mich.

—**General Motors**, Santa Monica, Calif. $1,044,000. Construction of a re-entry study program. Army Missile Command (AMC), Huntsville, Ala.

—**AVCO Corp.**, Stratford, Conn. $1,065,000. Combustion liner assemblies for T53 engines for UH-1 aircraft. Stratford. Army Aviation Command (AMC), St. Louis, Mo.

—**Continental Motors**, Muskegon, Mich. $2,085,869. Engine assemblies and connecting transmission for M60A1 tanks. Army Tank Automotive Center (AMC), Warren, Mich.

24—**Western Electric**, New York City. $7,293,304. NIKE X research and development facilities. Burlington and Winston-Salem, N.C. and Allentown, Pa. NIKE X Project Office, Redstone, Ala.

—**Hercules Powder Co.**, Wilmington, Del. $1,045,321. Maintenance and support services. Sunflower Army Ammunition Plant, Lawrence, Kan.

—**Boeing Co.**, Morton, Pa. $2,050,030. Chinook helicopter components and assemblies. Army Aviation Command (AMC), St. Louis, Mo.

—**Bell Helicopter Co.**, Fort Worth, Tex. $3,950,640 and $5,003,932. Blade assemblies for UH-1 helicopters. Army Aviation Command (AMC), St. Louis, Mo.

—**Bell Helicopter Co.**, Fort Worth, Tex. $3,000,000. Work and services necessary to provide aircraft components and assemblies, preproduction planning and tooling to protect the delivery requirement and schedule for UH-1E helicopters. Army Aviation Materiel Command (AMC), St. Louis, Mo.

—**Scovill Mfg. Co.**, Waterbury, Conn. $4,507,501. Ordnance items. Ammunition Procurement and Supply Center (AMC), Joliet, Ill.

—**Accurate Die Casting Co.**, Cleveland, Ohio. $1,037,702. Ordnance items. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Carter Carburetor Div. of ACF Industries**, St. Louis. $3,030,384. Ordnance items, Olivette, Mo. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

27—**Olin Mathieson Chemical Corp.**, East Alton, Ill. $8,191,808. Ordnance items and maintenance and support services. Charlestown, Ind. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Eugene Luhr & Co.**, Columbia, Ill. $1,389,154. Work on East St. Louis and Vicinity, Ill., Local Flood Control Project. St. Clair County, Ill. Engineer District, St. Louis.

28—**Western Electric**, New York City. $21,680,464. Design and development of the NIKE ZEUS anti-missile missile. Whippany, N.J. and Santa Monica, Calif. NIKE X Project Office, Redstone, Ala.

29—**Baxter Construction Co.**, Houston, Tex. $1,224,271. Construction of the Atmospheric Re-entry Materials and Structures Evaluation Facility at the Manned Spacecraft Center, Clearwater, Tex. Engineer District, Fort Worth, Tex.

Highway Products, Inc., Kent, Ohio. $1,706,231. Aluminum boats to be used for the erection of bridges. Cleveland, Ohio. Army Mobility Equipment Center (AMC), St. Louis.

Western Electric, New York City. $1,146,650. Operation of discrimination radar and target track radar. White Sands Missile Range, N.M. NIKE X Project Office, Huntsville, Ala.

Western Electric, New York City. $4,367,640. Continuous research and development in connection with the NIKE X Optics Program. Everett, Mass. and Kwajalein Island. NIKE X Project Office, Huntsville, Ala.

Stanford University, Palo Alto, Calif. $1,529,200. Research of advance information processing. Stanford University. Defense Supply Service, Washington, D.C.

30 **Ravenna Arsenal, Inc.**, Akron, Ohio. $2,560,425. Maintenance and support services under standby conditions. Ravenna, Ohio. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—**Sperry-Rand**, New York City. $3,368,144. Classified ammunition. Shreveport, La. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Thiokol Chemical Corp.**, Bristol, Pa. $2,333,645. Illuminating shells. Marshall, Tex. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

Mason & Hanger Co., Lexington, Ky. $8,337,619. Ammunition. Burlington, Iowa. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—**Atlas Chemical Industries**, Valley Forge, Pa. $4,281,100. Reactivation of the Volunteer Army Ammunition Plant and manufacture of TNT. Chattanooga, Tenn. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

Day & Zimmermann, Inc., Philadelphia. $16,420,527. Classified ammunition. Texarkana, Tex. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

Western Electric Co., New York City. $1,288,214. FY 66 technical publications for use with the NIKE HERCULES System. Burlington, N.C. Army Missile Command, Huntsville, Ala.

Case Master Body, Inc., Rose City, Mich. $3,202,510. Watertank trailers. Rose City and Stockton, Calif. Army Tank Automotive Center (AMA), Warren, Mich.

General Electric, Burlington, Vt. $6,823,644. Aircraft machine guns, aircraft armament pods and ancillary hardware. Army Weapons Command (AMC), Rock Island, Ill.

General Dynamics, San Diego, Calif. $2,198,500. Design, furnishing and installation of an operational TV system for Launch Complex 39, Kennedy Space Center, Merritt Island, Fla. Canaveral District, Corps of Engineers, Merritt Island, Fla.

Highway Products, Inc., Kent, Ohio. $1,737,904. Aluminum boats to be used for the erection of bridges. Cleveland, Ohio. Army Mobility Equipment Center (AMC), St. Louis.

Martin-Marietta, Orlando, Fla. $2,317,910. Continued installation of modification kits in support of the PERSHING weapons system. Army Missile Command, Huntsville, Ala.

General Precision, Inc., Little Falls, N.J. $2,834,960. Hydraulic actuation system for the PERSHING missile system. Clifton, N.J. Army Missile Command, Huntsville, Ala.

Bendix Corp., Teterboro, N.J. $1,852,268. FY 66 engineering services for guidance and control for the PERSHING missile system. Army Missile Command, Huntsville, Ala.

Stanford Research Institute, Menlo Park, Calif. $1,602,110. Studies for the anti-missile missile system. NIKE Project Office, Huntsville, Ala.

Kentron Hawaii, Ltd., Honolulu. $3,863,247. NIKE X range support. Kwajalein. NIKE X Project Office, Huntsville, Ala.

AVCO Corp., Richmond, Ind. $1,075,101. Bomb parts. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

Caterpillar Tractor Co., Peoria, Ill. $4,595,920. Tractors. Decatur, Ill. Army Mobility Equipment Center (AMC), St. Louis.

Philco Corp., Newport Beach, Calif. $2,000,000. SHILLELAGH missile system test equipment. Los Angeles Procurement District, Pasadena, Calif.

—**Benton Corp.**, Troy, Mich. $1,110,100. Modification kits for the HAWK loader transporter. Troy and Detroit, Mich. Army Tank Automotive Center (AMC), Warren, Mich.

Sperry-Rand Corp., Salt Lake City. $4,094,804. Product and production engineering services for SERGEANT missile system. San Francisco Procurement Dist., Oakland, Calif.

Martin-Marietta, Orlando, Fla. $17,420,937. Continued engineering support for the PERSHING weapons system. Army Missile Command, Redstone Arsenal, Ala.

—**Fisher Chemical Co.**, New York City. $1,021,746. Chemical agent CS1, a riot control agent. Great Meadows, N.J. Edgewood Arsenal, Edgewood, Md.

Elsen Bros., Inc., Hoboken, N.J. $1,367,338. Projectile assembly parts. Lodi, N.J. New York Procurement Dist. New York City.

—**Eastern Tool and Mfg. Co.**, Belleville, N.J. $1,005,957 Projectile assembly parts. New York Procurement Dist., New York City.

General Motors, Detroit, Mich. $1,532,485. Phase III extension for two months of the design and development of the US-FRG Main Battle Tank. Milwaukee, Wis. Army Tank Automotive Center (AMC), Warren, Mich.

Bell Helicopter Co., Fort Worth, Tex. $2,352,000. Machine tools in support of the UH-1 Helicopter program. Army Aviation Materiel Command (AMC), St. Louis.

Bell Helicopter Co., Fort Forth, Tex. $9,831,086. Transmission assemblies for UH-1 helicopters. Army Aviation Materiel Command (AMC), St. Louis.

—**Kaiser Jeep Corp.**, Toledo, Ohio. $46,045,847. 2½-ton trucks. South Bend, Ind. Army Mobility Command (AMC), Warren, Mich.

—Continental Motors, Muskegon, Mich. $14,939,440. Multi-fuel engines. Army Mobility Command (AMC), Warren, Mich.

—Chrysler Corp., Rock Island, Ill. $29,691,812. M60A1 tanks with concurrent repair parts. Centerline, Mich, Eynon, Pa and Dayton, Ohio. Army Weapons Command (AMC), Rock Island, Ill.

—Ford Motor Co., Dearborn, Mich. $25,015,020. ¼-ton trucks. Highland Park, Mich. Army Mobility Command (AMC), Warren, Mich.

—E. I. DuPont DeNemours, Inc., Wilmington, Del. $2,182,857. Trinitrotoluene (TNT). Barksdale, Wis. Ammunition Supply & Procurement Agency (AMC), Joliet, Ill.

—Emerson Electric, St. Louis. $2,771,500. Armament sub-systems for helicopters and inspection and test equipment. Army Weapons Command (AMC), Rock Island, Ill.

—Standard Container, Inc. Montclair, N. J. $1,780,672. Ammunition boxes, Homersville, Ga. Frankford Arsenal, Philadelphia.

—R. G. LeTourneau, Long View, Tex. $6,129,695. Production equipment to be installed in the LeTourneau Plant, Long View, Tex. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—Martin-Marietta, Orlando, Fla. $1,702,092. Ordnance components. Ammunitions Procurement & Supply Agency (AMC), Joliet, Ill.

NAVY

1—Zeller Corp., Defiance, Ohio. $1,001,036. MK 12 projectiles. $3,032,526. MK 18 projectiles. Defiance. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—United Aircraft, Pratt & Whitney Div., E. Hartford, Conn. $1,433,767. Spare parts for J-52 jet engines. Navy Aviation Supply Office, Philadelphia.

—United Aircraft, Sikorsky Aircraft Div., Stratford, Conn. $37,543,400. CH-53A helicopters. Bureau of Naval Weapons.

—Fischback & Moore, Inc., F.M. System Co. div., Dallas, Tex. $1,898,748. Central command and control systems, and data transmission and communication systems for use in the Navy Tactical Data System. Navy Purchasing Office, Washington, D.C.

2—General Electric, Cincinnati. $1,080,979. Spare parts to support the jet engines used on RA-5 and F4B aircraft. Navy Aviation Supply Office, Philadelphia.

—Lansdowne Steel and Iron Co., Morton, Pa. $1,831,833. 5-inch projectiles. Navy Ships Parts Control Center, Mechanicsburg, Pa.

3—Aerojet General Corp., Downey, Calif. $2,269,848. Design and development work on a classified project. Navy Purchasing Office, Los Angeles.

7—Sperry Rand Corp., UNIVAC Div., St. Paul, Minn. $1,942,386. Anti_submarine warfare ship command and control system analysis, design and computer programing, and associated technical data and technical reports. San Diego, Calif., St. Paul, Minn., and aboard various naval ships. Bureau of Ships.

8—Emerson Electric, St. Louis. $3,316,500. Radar receiving units (AN/APR-19) for F-4B aircraft. Navy Purchasing Office, Washington, D.C.

—Cameron Iron Works, Houston, Tex. $1,015,020. Guided missile boosters. Bureau of Naval Weapons.

—Collins Radio Co., Dallas, Tex. $5,927,581. Communications equipment. Richardson, Tex. and Cedar Rapids, Iowa. Marine Corps.

9—May Aluminum, Inc., El Campo, Tex. $2,250,000. Aluminum airfield matting. Naval Air Engineering Center, Philadelphia.

—Kaiser Aluminum and Chemical Sales, Oakland, Calif. $1,890,800. Airfield matting. Halethorpe, Md. Naval Air Engineering Center, Philadelphia.

—United Aircraft, E. Hartford, Conn. $40,097,808. J52-P-8A engines. $70,093,200. TF30-P-6 engines. Bureau of Naval Weapons.

10—Laboratory for Electronics, Boston, Mass. $3,838,912. Electronic altimeters for TA-4E, A-6 and C-2 aircraft. Danvers, Mass. Navy Purchasing Office, Washington, D.C.

13—Washington Aluminum Co., Baltimore. $2,785,028. Pallet and mat assemblies for use with Short Airfield Tactical System (SATS). Enterprise, Ala. Naval Aviation Engineering Center, Philadelphia.

—United Aircraft, E. Hartford, Conn. $3,708,048. TF33-P-11A engines for Air Force aircraft. Bureau of Naval Weapons.

—U.S. Steel, Pittsburgh, Pa. $1,285,200. Acquisition and installation of equipment for production of ordnance items at McKeesport, Pa. Bureau of Naval Weapons.

—Goodyear Tire & Rubber Co., Akron, Ohio, $1,359,673. Tires for F-4 aircraft. Navy Aviation Supply Office, Philadelphia.

—Whittaker Corp., Denver, Colo. $1,642,008. Batteries for the MK 37 torpedo. Navy Purchasing Office, Wash. D.C.

15—Guy F. Atkinson Co., Long Beach, Calif. $1,098,000. Construction of berthing facilities at the Naval Electronics Laboratory, San Diego, Calif. Southwest Div., Bureau of Yards and Docks.

—Anthony Co., Streator, Ill. $1,428,335. Diesel cranes. Marine Corps.

16—Dyson & Co., Pensacola, Fla. $1,854,882. Construction of an avionics repair shop at Pensacola Naval Air Station. Director, Southeast Div., Bureau of Yards & Docks.

17—RCA, Camden, N.J. $2,412,852. Airborne radio receiving sets and related equipment. Bureau of Naval Weapons.

—Westinghouse Electric, Landsdowne, Md. $14,702,000. MK48 torpedoes. Baltimore. Bureau of Naval Weapons.

—Boeing Co., Morton, Pa. $10,740,000. UH/CH-46A helicopters. Bureau of Naval Weapons.

20—Balfield Industries, Los Angeles. $17,088,130. Bomb fins. Shreveport, La. Naval Ordnance Plant, Louisville, Ky.

—Stepfer & Sons, Inc., Brooklyn, N.Y. $9,570,750. Bomb fins. Naval ordnance Plant, Louisville, Ky.

21—Pascoe Steel Corp., Pomona, Calif. $1,073,679. Pontoons and necessary accessories and fittings for construction of ramps and barges at Point Hueneme, Calif. Pomona. Navy Purchasing Office, Los Angeles.

—Melpar, Inc., Falls Church, Va. $4,552,600. Classified electronic equipment. Bureau of Naval Weapons.

—Huyck Corp., Huntington Station, N.Y. $1,465,450. Computer display sets. Navy Purchasing Office, Wash., D.C.

23—ITT Gilfillan, Inc., Los Angeles. $6,938,054. Radar equipment for installation aboard various naval ships. Bureau of Ships.

—Stewart-Warner Corp., Chicago. $1,199,958. Components of radar sets (AN/APQ 53A) for TA4E aircraft. Navy Aviation Supply Office, Philadelphia.

24—Sperry-Rand Corp., Long Island, N.Y. $1,058,838. Shipboard gun fire control system components and related equipment. Bureau of Naval Weapons.

27—General Precision, Inc., Little Falls, N.J. $1,043,750. Spare parts for the AN/ASN-41 navigation system used on A-4E aircraft. Navy Aviation Supply Office, Philadelphia.

—Lockheed Missiles & Space Co., Sunnyvale, Calif. $1,839,900 and $1,308,672. Tool retention program and POLARIS surface support equipment. Sunnyvale. Special Projects Office.

28—Douglas Aircraft Co., Long Beach, Calif. $35,256,030. Production of TA-4E aircraft. Bureau of Naval Weapons.

—Burrmann Construction Co., Chula Vista, Calif. $1,065,280. Construction of a submarine pier facility at the Public Works Center, Naval Submarine Support Facility, Ballast Point, Calif. San Diego. Director, Southwest Div., Bureau of Yards and Docks.

29—Aluminum Company of America, Pittsburgh, Pa. $1,632,000. Aluminum mat extrusions for airfield matting. Navy Air Engineering Center, Philadelphia.

30—General Dynamics, Pomona, Calif. $2,055,208. Retrofit changes for TERRIER and TARTAR missiles. Bureau of Naval Weapons.

AIR FORCE

1—Lockheed Aircraft, Marietta, Ga. $0,500,000. Production of HC-130 and EC-130 aircraft and related equipment. Marietta. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Bendix Corp., Teterboro, N.J. $1,312,380. Gyroscopes, amplifiers and related ground equipment for T-38 aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—General Electric, Cincinnati, Ohio. $27,000,000. Production of J-79 engines. Cincinnati. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—McDonnell Aircraft, St. Louis. $4,000,000. Work on an engineering study for the GEMINI portion of the Manned Orbiting Laboratory Program. St. Louis. Space Systems Div. (AFSC), Los Angeles.

—General Electric, Cincinnati, Ohio. $2,075,000. Engine development for C-5A aircraft. Cincinnati. Aeronautical Systems Div. (AFSC), Wright_Patterson AFB, Ohio.

—United Aircraft, E. Hartford, Conn. $8,000,000. Development work on propulsion systems applicable to a high-speed advanced manned strategic aircraft. E. Hartford. Aeronautical Systems Div. (AFSC), Wright-Pattetrson AFB, Ohio.

—Sparton Electronics, Jackson, Mich. $1,078,202. Aircraft Navigation Equipment. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Schenuit Rubber Co., Baltimore. $1,022,250. Production of B-52 aircraft tires. Baltimore. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—AVCO Corp., Wilmington, Mass. $1,000,000. Work on re-entry systems. Wilmington. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

2—Hughes Aircraft Co., Culver City, Calif. $4,391,950. Modification of MINUTEMAN missile test equipment. Culver City. Middletown Air Materiel Area (AFLC), Olmstead AFB, Pa.

3—Stanley Aviation Corp., Denver, Colo. $1,000,750. Production of aircraft escape system kits. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—System Development Corp., Santa Monica, Calif. $14,203,400. Upgrading of the Air Defense Command and Control System. Santa Monica. Electronic Systems Div. (AFSC), L. G. Hanscom Field. Mass.

7—American Air Filter Co., St. Louis. $2,659,000. Manufacture and installation of an environmental control system for MINUTEMAN Squadron 20. St. Louis and Great Falls, Mont. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

8—Giannini Controls Corp., Fairfield, N.J. $1,881,133. Flight data recording systems. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Bendix Corp., Teterboro, N.J. $1,531,106. F-4 aircraft armament systems. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—American Electric, Inc., Paramount, Calif. $3,068,000. Ordnance items. El Cajon and Paramount, Calif. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

9—Boeing Co., Wichita, Kan. $8,030,000. Modification kits for B-52 aircraft. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

10—Stromberg-Carlson Corp., Rochester, N.Y. $1,468,927. A 2000-line, a 2500-line and three 1000-line telephone central offices. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Alvey-Ferguson Co., Cincinnati, Ohio. $1,580,000. Fabrication, installation and test of air terminal automatic cargo handling equipment. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Lockheed Aircraft**, Marietta, Ga. $4,400,000. Procurement of C-130E aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Ryan Aeronautical Co.**, San Diego, Calif. $2,350,000. Target drones and related equipment. San Diego. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**General Dynamics**, San Diego, Calif. $4,100,000. Procurement of ATLAS/AGENA space boosters. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

13—**North American Aviation**, Anaheim, Calif. $1,535,841. Repair, maintenance and overhaul of airborne guidance and control systems and ground support equipment for the MINUTEMAN weapon system. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**Sylvania Electric Products**, Mountain View, Calif. $3,000,000. Procurement of security subsystems for MINUTEMAN wings II and III. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**General Electric**, Cincinnati, Ohio. $2,075,000. Development work on engines for C-5A aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

14—**Teledyne, Inc.**, Gardena, Calif. $1,084,920 Hydraulic test stands. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

15—**International Harvester**, San Diego, Calif. $1,224,000. Auxiliary gas turbine power units for CH-aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Hercules Powder Co.**, Wilmington, Del. $1,000,000. Delivery of flight configuration motors for the second stage of the ATHENA. Bacchus, Utah, Ballistic Systems Div. (AFSC), Norton AFB, Calif. Calif.

16—**Northrop Corp.**, Hawthorne, Calif. $1,740,060. Spare parts for F-5 aircraft. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

—**Boeing Co.**, Seattle, Wash. $2,328,240. Engine component improvement for Navy helicopters. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

17—**General Electric**, Cincinnati, Ohio. $2,075,000. Development work on engines for C-5A aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

20—**Holt Brothers**, Stockton, Calif. $1,110,914. Generator sets and related spare parts. Stockton. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—**General Motors**, Indianapolis, Ind. $8,500,000. Development of advanced T-56 aircraft engines. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Mitre Corp.**, Bedford, Mass. $8,160,000. Research and development for system engineering and technical direction in the field of command and control systems. Arlington, Va. and Bedford. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Mass.

21—**General Electric**, Cincinnati, Ohio. $9,751,168. Support of B-70 flight test program. Aeronautical Systems Div. (AFSC). Wright-Patterson AFB, Ohio.

—**Northrop Corp.**, Hawthorne, Calif. $11,600,000 and $1,360,000. Production of T-38 aircraft and production of F-5 aircraft components. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Hercules Powder Co.**, Wilmington, Del. $18,975,000. Production of stage III MINUTEMAN missile motors. Magna, Utah. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Cyro-sonics, Inc.**, Torrance, Calif, $1,017,554. Modification of liquid oxygen/nitrogen mobile generating plants. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

23—**Boeing Co.**, Wichita, Kan. $1,000,000. Modification of B-52 bomb bays. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

24—**AVCO Corp.**, Stratford, Conn. $1,020,479. Production of MARK 11-A re-entry vehicles. Stratford. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

27—**Burroughs Corp.**, Paoli, Pa. $1,175,000. Maintenance and supply support for a radar course directing system. Radnor, Pa. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Mass.

—**Lockheed Aircraft**, Marietta, Ga. $2,000,000. Production of C-130 aircraft and related equipment. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Philco Corp.**, **Palo Alto, Calif.**, $3,000,000. Work on a satellite network Space Systems Div. (AFSC), Los Angeles.

28—**Goodyear Aerospace Corp.**, Litchfield Park, Ariz. $3,406,330. Production of radar mapping equipment. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**I.B.M.**, Washington, D.C. $1,303,180. Electronic data processing components. Poughkeepsie, N.Y. 2750th Air Base Wing Headquarters (AFLC), Wright-Patterson AFB, Ohio.

29—**Thiokol Chemical Corp.**, Huntsville, Ala. $1,662,000. Work on a solid fuel rocket program. Air Force Flight Testing Center, Edwards AFB, Calif.

—**Lockheed Aircraft**, Ontario, Calif. $2,135,314. Modification, inspection and repair of F-101 aircraft. Lake Charles, La., Ontario and Burbank, Calif. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**Bendix Corp.**, Teterboro, N.J. $2,167,200. Production of electronic equipment for C-141 aircraft. Teterboro, N.J. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

30—**Atlantic Research Corp.**, Duarte, Calif. $4,073,000. Development of special test vehicles for re-entry vehicle systems. Ballistics Systems Div. (AFSC), Norton, AFB, Calif.

—**Boeing Co.**, Wichita, Kan. $12,000,000. Fatigue testing program for B-52 aircraft. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—**Sylvania Electric Products**, Waltham, Mass. $5,076,000. Fabrication of the medium frequency antenna subsystem for the sixth MINUTEMAN wing. Waltham and Needham, Mass. and Buffalo, N.Y. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

AFSC Establishes Long Line System Program Office

A Long Lines Communications System Program Office (SPO) has been formed within the Electronic Systems Division, of the Air Force Systems Command, located at L. G. Hanscom Field, Bedford, Mass. Lieutenant Colonel Garland B. Hilton has been named Long Lines Systems Program Director (SPD).

The Long Lines SPO ties together the following wideband systems being implemented to meet the Defense Communications Agency's requirements: 484N Pacific Area Communications, 486L Mediterranean Communications, 489L Northern Area Communications and 490L Autovon Switches.

Six divisions within the SPO will be headed by the following: Lieutenant Colonel Ernst E. Jahnke, Program Control; Mr. Robert R. Foley, Configuration Management; Lieutenant Colonel A. A. Masters, Engineering; Major Herbert J. Marker, Procurement and Production; Mr. Louis A. Robert, Support Management; and Lieutenant Colonel Vernon M. Smith, Test and Deployment. Mr. George W. Moulton is the Technical Director for the SPO.

Also involved, for engineering consultations when required is the Systems Command's Rome Air Development Center, Griffiss AFB, N. Y.

Under the direction of the Long Lines SPO are more than one quarter billion dollars in contracts for communications that will link more than 400 bases in the Pacific, Atlantic and European areas. The Mediterranean System alone will stretch more than 2,800 miles.

MSTS to Charter New Roll-on/Roll-off Cargo Ships

The Military Sea Transportation Service (MSTS) plans to charter a new design roll-on/roll-off cargo ship to be financed and constructed by commercial maritime interests.

Both the construction and the charter result from an MSTS authorization to engage a commercial operator willing to construct a gas-turbine roll-on/roll-off cargo ship in exchange for an initial seven-year charter. A second stipulation to the authorization was that the charter cost of such a ship be no more than comparable service from conventional ships.

The best offer meeting these conditions, made in response to an invitation to submit offers extended throughout the maritime industry by MSTS, was submitted by American Export Isbrandsten Lines, New York, in a joint venture with Sun Shipbuilding and Drydock Co., Chester, Pa.

The ship to be used by MSTS for point-to-point transportation of vehicular cargo will be powered by two "off-the-shelf" aircraft type turbojet engines and is designed for speeds of more than 25 knots. Propulsion will be accomplished by converting thrust from the tubojets to shaft power by means of an intermediate "free" turbine stage connected to the propeller shaft.

The ship will be the first of its kind to be designed and constructed by a commercial owner for use in offshore trade under United States flag. It will have a length of 672 feet, a beam of 91 feet and a displacement of 24,500 tons. Completion is scheduled for late 1967. Sun Shipbuilding and Drydock Company will construct the ship at an estimated cost of $20,000,000.

MSTS currently operates three other roll-on/roll-off ships, the USNS COMET, the USNS TAURUS and the MSTS-chartered SS TRANSGLOBE, all conventionally powered. A fourth roll-on/roll-off ship, the USNS SEA LIFT, also conventionally powered, is now under construction and is expected to enter MSTS service in 1966.

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Labor Surplus Awards Steady Despite Area Decline

Department of Defense prime contract awards to labor surplus area firms during FY 1965 amounted to $3.8 billion, or approximately 16 per cent of total awards of $24.3 billion.

During this period, the number of major labor market areas which were classified by the Secretary of Labor as having a "substantial labor surplus" declined considerably. These are the areas with the highest potential for Defense contract awards. At the beginning of the fiscal year, 35 major labor market areas and 14 large cities were so classified, compared with a year-end total of 21 major areas and five large cities. Considering this drop of 14 major areas and the single addition among large cities, the awards to firms in labor surplus areas remained remarkably steady. They decreased only fractionally from 16.3 per cent in FY 1964. The 16 per cent proportion of awards compares favorably with the 15.3 per cent in 1963, when the number of major areas was higher, ranging between 48 and 39 during the year.

This drop in major labor surplus areas having substantial labor surplus continues the favorable downward trend dating from March 1961, when a high of 101 major areas were classified as either "persistent and substantial" or "substantial" labor surplus areas.

The improvement in the major areas is paralleled by the situation for the "small" and "very small" areas designated by the Department of Labor which, together, form the entire labor surplus area group. During FY 1965, the number of small areas declined from 147 to 96 and the number of very small areas was reduced from 530 to 428.

The fact that awards to firms in labor surplus areas have remained consistent speaks well of the ability of such firms to compete for and win awards when they submit bids or proposals to make necessary items to support our military forces. They have utilized the services made available to them through the six programs of the Directorate for Small Business and Economic Utilization Policy, in the Office of the Assistant Secretary of Defense (Installation & Logistics), and the specialists assigned to the Military Departments in the field.

Ogden AMA Assumes Management of Minuteman I

The Ogden Air Materiel Area (AMA) of the Air Force Logistics Command has assumed complete logistics management responsibilities for the Minuteman I missile force.

Ogden AMA has handled logistic support, consisting of transportation, supply and maintenance, of Minuteman I since the first unit was turned over to SAC as an operational weapon in October 1962.

The new responsibilities include solving hardware problems by Odgen AMA engineers, procurement of all supplies and services needed for support of the Minuteman I force, investigation of safety problems, recording and scheduling the installation of hardware improvements and budgeting and programming for support of the weapon throughout the remainder of its operational life.

The Air Force System Command's Ballistic Systems Division at Norton AFB, Calif., previously had these responsibilities and will retain them for the Minuteman II program until it is completed.

The Minuteman I force now encompasses 800 missiles located in five wings operated by the Strategic Air Command.

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It's a Helicopter War

"The helicopter has been one of our most valuable pieces of equipment (in Vietnam). In addition to increased mobility and faster reaction time, it provides a close-in suppressive fire capability immediately preceding and during a helicopter troop lift into an assault area. The helicopter's battle staying capability is a matter of record. Between January 1962 and August 31 of this year, only 51 helicopters were lost to ground fire. The significance of this figure lies in the fact that when related to the actual sorties flown, this figure represents only one helicopter lost in battle for roughly every 16,614 sorties flown."

The foregoing is quoted from an address by General Harold K. Johnson, Chief of Staff, U. S. Army, before the National Security Industrial Association 22nd Annual Luncheon Meeting, Washington, D. C., Oct. 7, 1965.

For a discussion of the Army's response to the demands posed by the conflict in Vietnam, see article on page 1.

Unclassified 1966 Advanced Planning Briefings for Industry Scheduled by DOD

Deputy Secretary of Defense Cyrus R. Vance has announced that DOD will conduct a new series of unclassified regional Advanced Planning Briefings for Industry in 1966. These briefings, sponsored jointly by DOD and the National Security Industrial Association, will be held in the following metropolitan areas on the dates indicated:

Boston	March 3–4	Atlanta	March 9–10
St Louis	March 16–17	San Francisco	April 12–13
Washington, D.C	April 27–28		

Similar in purpose and scope to the briefings conducted in March and April of this year, the briefings will be designed to provide management and labor with an up-to-date DOD-wide picture of long range development needs, and to assist industry in planning for and seeking Defense contracts.

Defense contractors are again being invited to display their management improvement ideas and achievements. The exhibit of efficiencies instituted by defense industry was a highlight of the first series of briefings. Additionally, the DOD procurement counseling service will be offered in an area adjacent to the presentations during each of the two-day sessions.

Invitations to the briefings and local arrangements in the cities to be visited will be handled by NSIA Washington headquarters, its city chapters and sponsoring industries.

Facts on SEALAB II

SEALAB II, the longest deep-diving experiment ever performed, was completed Oct. 12. During the test 28 men, divided into three teams, lived at a depth of 205 feet for a total of 45 days.

The experiment utilized a new technique called saturation diving, which means that the divers' bodies became saturated with high pressure gas enabling them to live on the ocean floor for long periods of time. The pressure inside the diver's bodies matched the pressure of the water through which they traveled. The saturation diving technique also included a long and precisely controlled rate of return to the surface.

SEALAB II demonstrated new ways in which the Continental Shelves can be explored and exploited. The shelves are shallow underwater extensions of the continent which hold great potential in terms of food, minerals and ocean by-products.

In addition to proving the central thesis of the experiment, i.e., that men can live and work on the ocean bottom, SEALAB II operations:

- Demonstrated new salvage techniques.
- Demonstrated the ability of sea animals to be companions and assistants to man's underwater endeavors.
- Obtained, for the first time, numerical data on human performance while working in cold, dark water under operational conditions.
- Proved to oceanographers and biologists the value of underwater living. A large amount of data on marine life and ocean "weather" were obtained.
- Demonstrated that small groups of men can live together under hazardous conditions for long periods of time without friction if they are carefully selected on the basis of ability and job performance.

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BULLETIN

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The purpose of the *BULLETIN* is to serve as a means of communication between the Department of Defense (DOD) and its authorized agencies and defense contractors and other business interests. It will serve as a guide to industry concerning official policies, programs and projects, and will seek to stimulate thought by members of the defense-industry team in solving the problems that may arise in fulfilling the requirements of the DOD.

Material in the *BULLETIN* is selected to supply pertinent unclassified data of interest to the business community. Suggestions from industry representatives for topics to be covered in future issues should be forwarded to the Business & Labor Division.

The *BULLETIN* is distributed each month to the agencies of Department of Defense, Army, Navy, and Air Force, and to representatives of industry. Request for copies should be addressed to the Business & Labor Division, OASD/PA, Room 2E813, The Pentagon, Washington, D.C. 20301, telephone, OXford 5-2709.

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The Changing Army

by

Maj. Gen. Michael S. Davison, USA
Deputy Assistant Chief of Staff for Force Development
Department of the Army

Any Army which stands still cannot survive. Unless a constant stream of new ideas coupled with technological progress meshes into the Army, obsolescence sets in. It is especially vital during these days of constant turmoil and crisis that we continue to develop modern and up-to-date doctrine and systems.

This year we have introduced a new Army Concept Program. Far-sighted concepts that look 20 years into the future assure a foundation for effective materiel development. The Army of the near future is largely determined by weapons and systems under development. Nevertheless, there are future goals sought by the Army that are not constrained by current and near-term equipment. The Army Concept Program is designed as a management instrument to assure the orderly, coordinated achievement of those goals.

But how do we deal with the immediate situation at hand such as the struggle in Vietnam? We have, in that country, a team with the appropriate name ACTIV which stands for "Army Concept Team in Vietnam." This team is stationed there as an element of the Joint Research and Test Activity. ACTIV evaluates Army concepts, doctrine and materiel and recommends improvements to increase the combat effectiveness of both United States and Vietnamese forces.

ACTIV reports are not based upon dreams and assumptions from ivory towers, but upon reliable data obtained by direct observation of combat operations. These data are analyzed and evaluated and are then reported, with appropriate recommendations, to the Army and Department of Defense decision makers. In addition, ACTIV formal reports are sent to the Defense Documentation Center, Cameron Station, Va., where they are available to other Government agencies and to civilian organizations who have the proper security clearance and can establish a need-to-know.

The early ACTIV reports were instrumental in proving the operational effectiveness of helicopters in Vietnam. Some significant early findings, verified by experience, were that suppressive fires from escorts significantly reduced the number of hits on escorted helicopters and that armed escort helicopters can operate effectively in a counterinsurgency environment like that prevailing in Vietnam.

Other ACTIV findings are that the Caribou airplane proved well suited for the Army's forward area support needs. Its short takeoff and landing capability permits regular use of short, rough, unimproved airfields, the only fields available to many units in Vietnam.

ACTIV has also shown that the Mohawk aircraft can provide timely, high quality target information of significant value.

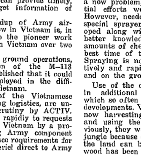
The large buildup of Army aircraft occurring now in Vietnam is, in part, a tribute to the pioneer work done by ACTIV in Vietnam over two years ago.

In the area of ground operations, ACTIV evaluation of the M-113 troop carrier established that it could be effectively employed in the difficult terrain of Vietnam.

Other facets of the Vietnamese operation, including logistics, are under continuous scrutiny by ACTIV.

We try to react rapidly to requests for materiel from Vietnam by a procedure permitting Army component commanders to place requirements for non-standard materiel direct to Army headquarters.

We then take action in coordination with the Army staff to get the materiel into the hands of the troops in the shortest possible time. In some cases, years have been chopped off the routine procurement time. Some examples of equipment sent to Vietnam in quantity under these direct action procedures are: crew protection kits for Army aircraft, body armor for combat troops, weapons of several types, cargo and fuel handling equipment and radios for Army aircraft.



Deputy Assistant Chief of Staff for Force Development Major General Michael S. Davison is responsible to the Army Chief of Staff for development of doctrine, systems and units required to maintain a flexible, trained force structure in the Army. General Davison is a former Chief of Staff of the V U. S. Corps in Germany and Commandant of Cadets at the U. S. Military Academy.

Ambush from the cover of heavy vegetation along roads, power lines and canals in Vietnam has been a favorite and effective Viet Cong tactic, which at one time took a heavy toll of casualties. The use of chemical defoliants to open up many areas has resulted in a marked decrease in these ambushes.

Chemical defoliation of jungle areas at first presented difficulties. This was a new problem, and some of the initial efforts were not too effective. However, needed equipment, such as special sprayers, was rapidly developed along with the acquisition of better knowledge of the type and amounts of chemicals needed and the best time of the year to use them. Spraying is now accomplished effectively and rapidly both from the air and on the ground.

Use of the defoliants has resulted in additional unexpected success, which so often happens with military developments. Vietnamese farmers are now harvesting the defoliated trees and using the wood for fuel. Previously, they were afraid to enter the jungle because of the Viet Cong. Also, the land can be cultivated after the wood has been cut.

Riot control agents, such as tear gas, have promising prospects for the clearing of tunnels and flushing Viet Cong from other hiding places. The Viet Cong's ruthless use of women and children as shields gives them an advantage on which they capitalize to the limit. In these cases, harmless tear gases are far preferable to bullets and grenades.

The major responsibility of the Office of the Assistant Chief of Staff for Force Development (ACSFOR) is providing General Westmoreland the Army forces he needs in Vietnam. This has been accomplished quite successfully.

On July 14, Defense Secretary McNamara went on a five-day fact-finding trip to Vietnam. On July 28, the President addressed the nation and announced U.S. forces would be increased in Vietnam by 125,000 men. The next day, the First Brigade of the 101st Airborne Division arrived in Vietnam. On Sept. 14 the First Cavalry Division was in the country and, in early October, the rest of the First Infantry Division arrived. One brigade of this division arrived in Vietnam in mid-July. These are major units. When we consider the entire spectrum of units ranging from divisions to small detachments, we have sent over 400 units to Vietnam.

On the surface, this is merely a matter of issuing orders to trained units and monitoring their execution. However, a substantial number of the smaller units and detachments had to be newly activated to meet requirements peculiar to operations in Vietnam. The big job, of course, was being done by Continental Army Command and the subordinate commands. Meeting demands placed on our personnel resources and logistics have challenged planners and operators at all levels. Deployable personnel have been somewhat of a probem—substantial replacements being required in a given unit prior to deployment in many cases. Nevertheless, units have deployed on or close to schedule.

While meeting low intensity warfare requirements in Southeast Asia, we must retain our capability to reinforce worldwide deployments and to meet other contingencies. To retain this flexibility the Army was authorized a 235,000-man increase.

This brings up another responsibility of ACSFOR: in coordination with other Army staff agencies, provide direction and guidance to the Continental Army Command for this force buildup. In terms of major units, this increased manpower adds to our current force structure an infantry division and three infantry brigades. This increase almost doubles the untrained input into the active Army during the fiscal year.

No potential enemy should mistakenly conclude that our increased support to the Republic of Vietnam weakens our ability to come to the aid of other free peoples.

Since World War II our global commitments have required that our soldiers be trained to fight anywhere from Polar regions to jungle and deserts.

For individual soldiers and combat units destined for Vietnam we have increased our use of the counterinsurgency and jungle operations training facilities in Hawaii and elsewhere. We are currently examining the need for further increases in the use of these training facilities. As an example of the increase in this type of preparatory training for duty in Vietnam, 250 selected officer and NCO unit instructors from the First Cavalry Division (Airmobile) and the First Infantry Division were given special courses of instruction in counterinsurgency and jungle operations immediately following notification of alert for deployment. As a minimum, all soldiers deploying to Vietnam undergo a mandatory training program ranging in scope from lectures on the nature of communist-inspired insurgency and the organization and method of operation of the Viet Cong to field training in the techniques of ambush and counter-ambush.

We have reorganized our officer training for advisors being assigned to the Military Assistance Command in Vietnam. Beginning in October, officer specialists will attend a special six-week course oriented toward Vietnam in either civil affairs, psychological operations, or intelligence. Those officers scheduled as advisors to Republic of Vietnam divisions and corps and at sector and subsector level will receive special six-week military assistance training advisor courses. About 50 per cent of the advisors will be given additional Vietnamese language training for 12 weeks at the Defense Language Institute. This program will provide optimum training in the United States with a reduction in pipeline time.

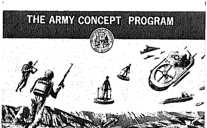
Finally, a few words on the many ideas the Army receives from the public. About 350 of these arrive each month, mostly covering aspects of the Vietnam situation. Many ideas are already in practice or have already been considered. Some are humorous while others are really new and of interest. All ideas are carefully considered and some are sent to Vietnam for on-the-spot review.

Every suggestor receives a reply from either a top official of the Government or a general officer. Use of sentry dogs has caught the fancy of many. The Army is indeed using dogs in Vietnam, especially on foot patrols. However, we wish we had a dog that could spot Viet Cong among other Vietnamese.

Two young students from Rochester University came to Washington recently at their own expense with a carefully prepared idea. They presented a technical analysis containing a radar application for detecting armed Viet Cong. Their concept warrants and is getting a prompt, hard look at the Army's limited war laboratory, Aberdeen, Md.

While many individual, interesting and novel suggestions are submitted to the Army, it is to the defense industry that the Army looks for its hardware. It has been gratifying to see the response that industry has made to the Army's requirements for new equipment to be planned, constructed, tested and produced in a limited period of time to meet the current demands of Vietnam.

This is a brief over-view of things being done to develop and maintain a modern, balanced, ready Army, particularly in support of the conflict in Vietnam. Every effort is being made to meet the operational demands of today's world while, at the same time, we try to chart the course for the Army of the future. Our success in the first task is subject to finite measurement; for the second we must await the judgment of time.



Industry and the Navy's Anti-Submarine Warfare Systems Project

by

Captain V. P. Healy, USN
Director, Plans and Programs Group
Anti-Submarine Warfare Systems Project
Office of Chief of Navy Material

Anti-Submarine Warfare—or "ASW" in Navy talk—was a crucial problem during World War II. The problem of countering the submarine is as yet only partially solved and remains one of the Navy's most serious challenges today.

There are two primary differences between the ASW problems of 1945 and 1965. First, our possible antagonists have more submarines and, second, the individual submarine is incomparably more formidable. Not counting a moderate number of Russian-built submarines in the hands of communist block nations, the free world *could* be faced with a drive for control of the sea by more than 400 submarines of the Soviet fleet. Most of the modern Soviet submarines are post-World War II snorkel boats of the "W" Class. Others, such as the "Z" Class, are relatively new, highly efficient undersea weapons. In addition, an unknown and relatively small—but growing—number of Soviet submarines are nuclear powered.

Just as the capabilities of submarines have increased in recent years, so has the Navy's ability to develop and deploy improved anti-submarine weapons systems. The central element in the Navy's drive for technical superiority over the undersea threat is the Navy's Anti-Submarine Weapons Systems (ASWS) Project, headed by Rear Admiral C. A. Karaberis and chartered in July 1964. The goal of the ASWS project office is to provide for the ASWS technical effort:

- Immediate executive authority to accomplish the Navy's ASW goals in the most effective manner.
- A fast-acting decision mechanism.
- A quick recognition and correction of problems.
- A single focal point to which industry can come for ASW.
- A concentration of resources and talent.
- A singleness of purpose.

To do this, the ASWS project office provides centralized technical direction and management control to all ASW systems, whether they are mounted on aircraft, ships, submarines, or fixed installations. This centralized direction and control extends from the developmental stage of the technical ASW system, through the production phase and into the logistical support of the system after it is installed and operating.

The direction and control which the ASWS project manager are charged with exercising are of two types: direct management and project direction.

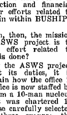
The ASWS project office exercises *direct management* of most on-going ASW work. This effort was formerly carried out within the Bureau of Ships (BUSHIPS) and the Bureau of Naval Weapons (BUWEPS) but has now been physically relocated to the ASWS project office. The aim of this arrangement is to forge strong bonds where otherwise there could be interfaces or planes of weakness at project or office boundaries.

The other type of control exercised by the ASWS project manager is *project direction*. This takes the form of technical direction and financial control over other efforts related to ASW which remain within BUSHIPS and BUWEPS.

In capsule form, then, the mission of the Navy's ASWS project is to control technical effort related to ASW. How is this done?

To explain how the ASWS project office carries out its duties, it is necessary to explain how the office is organized. The office is now staffed by 365 people, up from a 10-man nucleus when the project was chartered 16 months ago. These carefully selected specialists form three groups: the Plans and Programs Group, the Technical Group and the Systems Analysis Staff.

The Plans and Programs Group, as its name implies, looks at the future, assigns resources, prepares and justifies the budget and evaluates progress. As part of its look at the future, it prepares "time-quantity" plans against which development, production, test, installation and all other aspects of ASW technical progress will be measured.



Capt. Vincent P. Healey, USN, is Director of Plans and Programs for the Manager, Anti-Submarine Warfare Systems Project. Prior to this assignment, he commanded Destroyer Squadron THREE operating in the South China Sea in support of operations in Vietnam.

The Technical Group, largest of the three with about 250 personnel (75 per cent of which are engineers), exercises the *direct management* and *project direction* previously described.

The Systems Analysis Staff has the responsibility for analyzing ASW systems for effectiveness—both for their technical effectiveness and their cost effectiveness. It also conducts operations research studies.

Reviews to date have revealed a number of action-demanding problems—problems which form recurring patterns as system after system reveals similar strengths and weaknesses. Eventually, under Admiral Karaberis' direction, all major Navy ASW systems will be subject to complete technical scrutiny.

The ASWS project will concentrate management attention on:

- Improving the *reliability* of ASW systems, both existing systems and new ones.
- Improving the *maintainability* of these systems.
- Emphasizing quality control.
- Minimizing configuration changes.
- Integrating equipment and vehicle design more carefully.
- Increasing the liaison between engineering and production organizations.

Responsibility for good management of ASW projects rests squarely on the shoulders of Admiral Karaberis and upon those to whom subsidiary responsibility has been assigned. Formerly, before the ASWS project office was established, this responsibility was fragmented. Now, it is specifically assigned to the project manager and specifically accepted by project personnel. The spirit and outlook of the ASWS project office is marked by full acceptance of the challenge to provide better management to the Navy's drive for improved technical efficiency in ASW.

A similar responsibility also devolves upon industry. If the ASWS project's efforts to analyze systems have revealed anything, they have revealed this: there is a gap between the ability of ASW systems to perform in the fleet and the level of effectiveness proved to be possible during the developmental process. The actual performance of delivered systems has at times been less than designers had predicted and at times

A NATO Common Defense Market

by

Henry J. Kuss, Jr.

Deputy Assistant Secretary of Defense
(International Logistics Negotiations)

Three major subjects have hit the newspapers of this country in the last six months which relate to the subject of this article—"A Common Defense Market."

First, Secretary of Defense McNamara on several occasions announced the extensive orders, commitments and options which had been taken by the Defense Department and U. S. industry in the last four years for the supply of military products of our allies. The latest of these, in August, noted that since the end of FY 1961:

- The United States has received orders, commitments and options for over $9 billion of military equipment.
- These orders have brought over 1,200,000 man years of employment, spread through all 50 states and the District of Columbia.
- The cash receipts alone from these orders would amount to almost $5 billion during this period, offsetting approximately 40 per cent of the dollar costs of the U. S. Armed Forces abroad.

This shows we have already a type of allied common market for defense products. If we had not been able to compete, and if our Allies had not been willing to eliminate some of the obstacles of international trade, we would not have had anything like this size of program.

The second major point to remember is that in the last year is that on May 30 Secretary McNamara was reported in the press of the world to have proposed the creation of a "common market" for defense products within the North Atlantic Treaty Organization. *The New York Times* quoted Secretary McNamara as saying that he would be discussing with various ministers the joint development and joint production of arms and a movement towards what, in effect, would be a NATO common market for defense production. In general, most of the press responded favorably to this idea. For example, the *Washington Post* stated that, whether or not the remark was on the spur of the moment, it had great appeal, and noted that for too long now the NATO nations had been stating the desirability of standardizing military weapons within the alliance and pooling production facilities—and yet only getting around to this in very limited fields.

There were, of course, some negative comments as well. Some people indicated that it was all well and good to make such grandiose statements but that they were sure that the industrial lobbies of America would never allow a two-way street approach on any terms. Thus, the groundwork was laid for a series of discussions and new initiatives on common defense production in NATO—in effect a NATO common defense market.

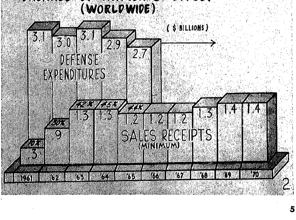
A few months later the press carried stories concerning the third major subject related to such common market activity. The Department of Defense initiated discussions with the United Kingdom leading to the competition by the British shipbuilding industry on four classes of ships in direct connection with the large UK orders or options for U. S. aircraft. It is true that this ship procurement was only a small proportion of the UK aircraft orders but it is starting the two-way street process in the highly competitive manner characteristic of a common market style operation.

Thus, in the space of the last six months, we have all become increasingly aware, in industry and Government, of a tremendous flow of goods from the U. S. to our allies as a result of their own competitive buying practices. At the same time we have recognized the need to consider a two-way street for such activities where allied industries were sufficiently competitive.

I believe we are dealing with a program which should be clearly recognized by industry as motivated by our self-interest, and a program which motivates the self-interest of our allies throughout NATO, for both cost reduction as well as industrial reasons. It is my intention to describe my personal views on this living program—to talk about its basic premise, to describe the characteristics of a common market approach as I see it and to describe the kind of activities I foresee over the long range future in implementing this idea. These are my personal views at the moment since in the final analysis the actual program will be developed by give and take consideration within the agencies of our Government, between our Government and industry and between ourselves and those allies who purchase large quantities of material from us and who have the industries capable of contributing on a competitive basis to the defense posture of NATO.

Basic Premise.

Turning first to our basic premise, let me first say that I have been seeking the advice and counsel of 26 members of industry on the Export Committee of the Defense Industry Advisory Council with respect to the basic principles of operation and implementation of any new initiatives for a defense common market. Through these representatives we



have also established a liaison with the International Committees of the National Security Industrial Association, Electronic Industries Association and Aerospace Industries Association. Thus, you can see what I meant when I spoke of give and take between Government and industry.

In these considerations, Mr. Mansfield Sprague, a Vice President of the American Machine and Foundry Company and a former Assistant Secretary of Defense for International Security Affairs, attempted to describe, in one piece of paper, the broad premises of a common market program. His paper provides me with a quite understandable and statesmanlike basis for viewing U. S. export actions in the world today. It bears repeating here and I quote:

"The years since World War II have thrust on the United States the lonely responsibility for the major defense effort in the free world and the unsought task of exercising primary leadership in the struggle for both prosperity and survival.

"The economics of free world defense have required above all flexibility and a willingness to alter course with changing circumstances. In 18 years we have run the gamut from outright grant aid to offshore procurement, to military assistance loans, to infrastructure, to joint production, to outright sale and export of United States produced military hardware. The rapid growth of such sales to our allies in recent years is illustrated by the $9 billion of purchase orders and options received from foreign sources for domestic produced military equipment. It is expected that this level of exports, approximately $2 billion a year, can be maintained over the next 10 years. However, this vital export program has triggered a serious question. How long will this trend be allowed by foreign governments to continue without some compensating inducement to them to sell less expensive but essential equipment to us?

"A meaningful answer is provided by the common market defense procurement concept initiated by Secretary McNamara, the implementation of which is now being hammered out jointly by Government and industry.

"The basic premise underlying this challenging project is grounded in these essential facts:

"1. NATO and the loosely organized Atlantic Community are indispensable to world peace, to prosperity within the community and to finding a cooperative solution to the enormous struggle of the free developing nations for economic progress and freedom.

"2. Common defense absolutely requires a sharing of the economic burdens which it imposes.

"3. The vast military production potential of this country developed at our own expense for our own and the free world's survival makes it possible for our allies to purchase United States produced hardware and systems for substantially less than if they were separately or even jointly to develop home-grown comparable products.

"4. For reasons of national prestige and economic policy our allies will insist on developing and producing some equipment which can be done competitively and with acceptable quality.

"5. The defense export program of the United States at current levels is essential both to the United States and to our allies:

"a. To provide them with the most up-to-date effective hardware at the lowest cost.

"b. To increase commonality of weaponry.

"c. To mitigate our balance of payments problem which is generally recognized by our allies as having been caused and continued by the commitments we have made to them for worldwide defense through troop concentrations overseas, grant military and defense support assistance on the periphery of the communist bloc countries and the provision of vast economic aid to countries whose stability is threatened by poverty and ignorance.

"6. To maximize this vital export program and to make it politically and economically more attractive to overseas allies, it is appropriate that we consider launching and supporting a program designed:

"a. To purchase on a competitive basis defense selective items produced in allied countries for the United States defense establishment.

"b. To assist allied countries to maintain a defense production capability sufficient to induce defense budgets at a level constituting their fair share in each case of the free world defense burden, and which capability is primarily in items which are compatible with the free world competitive situation for defense products.

"c. To foster increasing military, political and economic planning and integration in these areas with the United States and Canada.

"d. To achieve the greatest, most cost-effective free world defense production for the common defense.

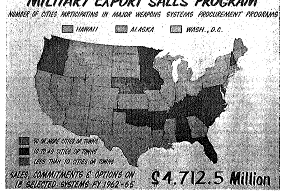
"No policy to be considered by the United States will have domestic support or foreign credence unless it is rooted in our own self-interest. But self-interest does not require only that it is solely profitable to this country and is a one-way street. In fact, our very successful defense export programs will be increasingly counter productive without the acceptance of the same concept of free flow of trade which dominates international common markets. The common defense market idea is simply a recognition of this fact and proposes an enlightened method for its implementation."

Characteristics of a Common Defense Market.

So much for our premise. Let us turn our attention to the characteristics of a common defense market and the kind of steps which might be taken towards achieving the benefits of such a market.

A common market in its purest form probably does not exist anywhere in the world and may never exist in its purest form. A common market in its theoretical form would eliminate all barriers to the free flow of trade, technology and capital. Thus,

(Continued on page 24)


MILITARY EXPORT SALES PROGRAM
NUMBER OF CITIES PARTICIPATING IN MAJOR WEAPONS SYSTEMS PROCUREMENT PROGRAMS
HAWAII
ALASKA
WASH., D.C.
50 OR MORE CITIES OR TOWNS
10 TO 49 CITIES OR TOWNS
LESS THAN 10 CITIES OR TOWNS
SALES, COMMITMENTS & OPTIONS ON 18 SELECTED SYSTEMS FY 1962-65
$4,712.5 Million

ABOUT PEOPLE

DEPARTMENT OF DEFENSE

Dr. John S. Foster, Jr., is the new Dir. of Defense Research & Engineering. He succeeds Dr. Harold Brown who is the new Secretary of the Air Force.

Maj. Gen. Frank T. McCoy, USAFR, has been appointed to a three-year term as a member of the Reserve Forces Policy Board succeeding **Brig. Gen. Joseph T. Benedict, USAFR,** whose term has expired.

RAdm. Elton W. Sutherling, USN, has been amed Dep. Commander for Operations of the Military Traffic Management and Terminal Service.

Capt. Walter W. Tolson, USN, has been appointed Dir., Detriot Defense Contract Administration Services Region, a field activity of the Defense Supply Agency. He succeeds **Col. Warren E. Besse, USA,** who is retiring.

Capt. Joseph S. Burkle, USN, has relieved **Capt. Charles G. Bratenahl, USN,** as Dep. Dir. of the Armed Forces Radiobiology Research Instituto, Bethesda, Md. Capt. Bratenahl has been reassigned as Executive Officer, National Naval Medical School, Bethesda.

Col. Fred E. Hayes, Jr.. USMC, has replaced **Brig. Gen. Eugene L. Strickland, USAF,** as Dir., Near East and South Asia Region, Office of Assistant Sectary of Defense (International Security Affairs).

Edgar B. Hamilton, Jr., has been named Chief of the Public Information Div., Military Traffic Management & Terminal Service. Mr. Hamilton was formerly an information officer for Military Air Transport Service.

Col. Samuel F. Miller, USAF, has been assigned Asst. Dir. for Contract Administration Services, Office of Asst. Secretary of Defense (Installations & Logistics).

DEPARTMENT OF THE ARMY

Dr. Robert A. Brooks, has been designated as Asst. Secretary of the Army (Installations & Logistics). Secretary Brooks was formerly with a Boston, Mass., management consultant firm.

Lt. Gen. Thomas W. Dunn has been named to succeed retiring **Lt. Gen. Robert W. Colglazier, Jr.,** as Commanding General, Fourth U.S. Army. **Lt. Gen. William F. Train,** now serving as Commanding General, Second Army, will replace Gen. Dunn as Commanding General, First Army. The Second Army will be consolidated with the First Army under General Train's command.

The Army's Nike-X Project Office at Redstone Arsenal, Ala., has announced the assignment of **Dr. Oswald H. Lange** as Chief Scientist and **Charles E. Richardson** as Chief Engineer. Dr. Lange was formerly with the NASA Marshall Space Flight Center. Mr. Richardson was the former Chief, Nike X Project's Test and Range Operations Div.

John M. Bialo has been selected to serve as the Army Test & Evaluation Command's top technical advisor on electronics, Aberdeen Proving Ground, Md.

Six Army Materiel Command general officers have been promoted to the rank of major general. They are: **Maj. Gen. William C. Gribble, Jr.,** Dir., Research & Development; **Maj. Gen. Henry A Miley, Jr.,** Dir., Procurement & Production; **Maj. Gen. Charles W. Eifler,** Dep. Commanding General, Land Combat Systems, Army Missile Command, Huntsville, Ala., **Moj. Gen. Woodrow W. Vaughan,** Commanding General, Army Natick Laboratories, Mass.; **Maj. Gen.. William B. Latto,** Commanding General, Army Electronics Command, Fort Monmouth, N.J.; and **Maj. Gen. Kenneth H. Bayer,** Dep. Dir., Research & Development.

Col. Rodger E. Lawless replaced **Col. James H. Schofield, Jr.,** as Project Manager of the Army Materiel Command's Selected Tactical Radios Activity

Col. Morton M. Jones, Jr., has been named Project Manager for General Purpose Vehicles, AMC.

Col. Mitchel Goldenthal has been designated Acting Project Manager for the U.S. Sattellite (SATCOM) Agency. He is located at Fort Monmouth, N.J.

Col. Erling J. Foss has been named Project Manager for the European Tropospheric-Scatter Communications Systems-Army (ET-A). The project office is located at Fort Monmouth, N. J.

DEPARTMENT OF THE NAVY

The Surgeon General of the Navy **Robert B. Brown** has been promoted to the three-star rank of vice admiral.

Capt. Robert J. Wooding, CEC, formerly Dir., Southeast Div., Bureau of Yards & Docks (Budocks), Charleston, S. C., has been promoted to the rank of rear admiral and assigned as Officer in Charge of Construction, Budocks Contracts, Republic of Vietnam, Saigon. **Capt. John G. Dillon, CEC,** has replaced him as Dir., Southeast Div., Budocks.

Capt. R. A. Hubbard has been assigned to the Office of Chief of Naval Operations as Assistant for Programs and Financial Management.

DEPARTMENT OF THE AIR FORCE

Dr. Robert G. Loewy, of the University of Rochester, N.Y., is the new Chief Scientist of the Air Force succeeding **Dr. Winston R. Markey** who has returned to M.I.T.

Jackson R. Stalder has been named Chief Scientist of the AF Flight Dynamics Laboratory, Wright-Patterson AFB, Ohio. He is the first to hold the position since August 1963, when the laboratory was organized under the Research Technology Div., AFSC.

Brig. Gen. Henry B. Kucheman, Jr., recently promoted to his present rank, has been reassigned as Dep., Limited War, Aeronautical Systems Div., AFSC, Wright-Patterson AFB, Ohio.

Brig. Gen. William H. Brandon has been reassigned as Commander, Air Base Wing 1605, MATS, and Commander U.S. Forces, Azores. **Brig. Gen. Roy W. Nelson, Jr.,** replaced Gen. Brandon as Vice Commander, Western Air Force, MATS, Travis AFB, Calif. **Col. Russel K. Pierce, Jr.,** has been assigned to replace Gen. Nelson as Commander, Air Weather Service, MATS, Scott AFB, Ill., from duty as Commander Third Weather Wing, MATS, Offutt, AFB, Neb.

Col. Paul G. Galentine, Jr., replaces **Col. Gustav E. Lundquist** as Dep. Engineering & Technology, Electronics Systems Div., AFSC, L. G. Hanscom Field, Mass. Col. Lundquist will become Dep. Commander, Rome (N.Y.) Air Development Center.

Col. Frederick C. Krug has been named Chief, Structures Div., AF Flight Dynamics Lab, Wright-Patterson AFB, Ohio.

The new AF Rocket Propulsion Laboratory director at Edwards AFB, Calif., is **Col. Elwood M. Douthett.** He replaces **Col. Joseph M. Silk,** who has retired.

Col. F. H. Foerster, Jr., has succeeded **Col. George E. Harrington** as Commander, Rome Air Materiel Area, Griffiss AFB, N.Y. Col. Harrington has been reassigned to Hq., Air Force Logistics Command, Wright-Patterson AFB, Ohio.

Col. Guy M. Townsend has been named C-5A System Program Dir. with station at AFSC's Aeronautical Systems Div., Wright-Patterson AFB, Ohio. He relieves **Col. Warner F. Rankin, Jr.,** who will remain with the System Program Office as Asst. Dir.

Air Force Logistics Command (AFLC) has designated **Col. Harold Walker** C-5A System Support Manager assigned at the San Antonio Air Materiel Area, Kelly AFB, Tex. **Lt. Col. George Grubic** will represent the C-5A System Support Manager at AFLC headquarters, Wright-Patterson AFB, Ohio.

CALENDAR OF EVENTS

Dec. 1–3: National Assn. of Mfg. Meeting, New York City.

Dec. 4: Aviation Demonstration, Fort Sill, Okla.

Dec. 5–9: American Institute of Chemical Engineers Meeting, Philadelphia, Pa.

Dec. 6–8: Chemical Specialties Mfg. Assn. Meeting, Washington, D.C.

Dec. 8–9: National Security Industrial Assn. and Air Force Systems Command Conference on "The Applications of Microelectronics Technology" at Sheraton Park Hotel, Washington, D. C.

Dec. 13–15: American Institute of Aeronautics & Astronautics Specialist Meeting, New York City.

Dec. 17: 62nd Anniversary of Powered Flight.

Dec. 26–31: American Assn. for Advancement of Science Meeting, Berkeley, Calif.

Jan. 10–14: Society of Automotive Engineers Convention, Detroit, Mich.

Jan. 11–12: Man's Extension Into the Sea, Tentative Industrial Information Program, Washington, D.C.

Jan. 13: 18th Pacific Coast Regional National Security Industrial Assn. Dinner, Los Angeles, Calif.

Jan. 24–27: American Meteorological Society Meeting, Denver, Colo.

Jan. 24–27: American Society of Heating, Refrigerating & Air Conditioning Engineers Meeting, Houston, Tex.

Jan. 30–Feb. 4: American Society of Civil & Structural Engineers Meeting, Miami Beach, Fla.

Jan. 31–Feb. 4: American Society of Civil Engineers Meeting, Miami Beach, Fla.

Feb. 28–March 2: 8th Joint National Security Industrial Assn. Industry-Military-Government Packaging & Materials Handling Symposium, Sheraton Park Hotel, Washington, D.C.

Engineering Research, Inc., A Small Business That Gets Contracts

Small industrial concerns which avoid seeking Government contracts because of tight competition or other reasons can be encouraged by the success of a small company in Indianapolis, Ind.

The record of this business concern demonstrates how efficiently operated small business manufacturing firms have the potential to become sources capable of delivering quality products at prices lower than previously paid in open competition and still make a satisfactory profit.

In 1953, Engineering Research, Inc., of Indianapolis, Ind., was incorporated. The company had never submitted a bid to the U.S. Navy Aviation Supply Office (ASO) until 1964 when it was introduced into the ASO Procurement Plan by the Small Business Specialist. Thereafter, frequent bids were submitted and E. R. Inc., was awarded nine ASO contracts within a period of nine months. This company continued to bid successfully during the 18-month period since filing a Bidders Mailing List Application. By June 30, 1965, the company had received 22 contracts totaling $252,896 in value. These contracts were awarded for various items, some of which had already been procured under open competition and others which had been procured from Sole Source. Items included special bolts, lock assemblies, military standard adapters and fittings, housing assemblies, nozzles, pin assemblies, swivel assemblies and cylinder assemblies. Break-out of the Sole Source items by ASO and the successful competition by E. R. Inc., saved the U.S. Navy a total of $65,142.56 in comparison with previous Sole Source prices and prices bid by previously successful competitive bidders.

Eight hundred and seventy-four Invitations For Bids were issued to prospective bidders for the 22 contracts. Two hundred and thirty three bids were submitted. E. R. Inc., was the lowest bidder for each contract and established a peace-time record at ASO for the number of competitive contracts awarded, within both the short period of nine months and the 18-month period, to a single small business manufacturer.

E. R. Inc., received subcontracts from such prime contractors as General Motors Allison Division and Magnovox Corp. Due to the increased volume of business being received and the extended recognition of this company by other Government procurement agencies and, in anticipation of continued success in bidding competitively at these agencies, this company constructed a new and larger plant and installed the latest type of machines and equipment.

Indiana Industrial Procurement Conference Scheduled for December

The Indiana Industrial Procurement Conference is scheduled to be held on December 15, 1965, at the Claypool Hotel in Indianapolis, Ind.

The conference will be sponsored by the Indiana Manufacturers' Association in cooperation with the Governor of the State and the Indiana Congressional delegation.

Federal Government agencies that will participate include the Defense Supply Agency, Army, Navy, Air Force, Atomic Energy Commission, National Aeronautics and Space Administration, General Supply Agency, Small Business Administration and the Department of Commerce.

Information on the conference may be obtained from A. C. Conde, Executive Vice President of the Indiana Manufacturers' Association, 832 Indiana Building, 120 East Market Street, Indianapolis, Ind., or from the DOD Coordinator, C. F. Cinquegrana, Defense Supply Agency, Cameron Station, Alexandria, Va.

Dallas-Fort Worth Small Business Council Formed

Representatives of nine major Texas prime contractors in the Dallas-Fort Worth area have set up a Council for Small Business and Labor Surplus Area Opportunities.

The purpose of the council is to improve communications through an exchange of ideas on the requirements of small business laws and regulations, study problem areas and instill a deeper spirit behind the Small Business Act by aiding and encouraging small business concerns whenever and wherever possible.

The initial meeting, held in October, was attended by representatives of Collins Radio, Ling-Temco-Vought, Bell Helicopter, EMTEX, Intercontinental Manufacturing Co., General Dynamics, Menasco, Geotechnical and Texas Instruments. During the first session details of the organization were worked out and plans formulated to meet quarterly.

AF Cites 17 Defense Contractors for ZD Efforts

Seventeen defense contractors have been selected to receive the first semi-annual Achievement Awards approved in the Air Force's Zero Defects (ZD) Program.

The selections are a result of an Air Force awards program designed to recognize significant contractor Zero Defects accomplishments. Its goal is to improve quality by developing pride of workmanship, personal responsibility and integrity in each individual and group that contributes to the production of Air Force equipment.

Participation by contractors in the Air Force program is voluntary. The Industrial Zero Defects Program, adopted by the Defense Department, is an outgrowth of the employee motivation concept that has gained increasing favor in American industry during the 1960's.

Under the Air Force award program, prime contractors are eligible for three types of recognition:

- The Participation Award — Designed to recognize employees who participate in a contractor-sponsored ZD type program considered to be within parameters established by the Air Force. Minimum contractor requirements include provisions to measure accomplishments and participation by 10 per cent of his plant personnel for 90 days or longer.
- The Achievement Award — To honor employees who have demonstrated significant achievement and/or improvements against contractor established program goals on a semi-annual basis.
- The Annual Craftsmanship Award — Demands a combination of sustained performance and outstanding achievements in cost reduction/avoidance, production reliability, safety, reduction in workmanship errors/scrap/rework and other areas which can be attributed directly to the Zero Defects Program. To qualify for the Craftsmanship Award employees of a contractor must have received two achievements awards during a 12-month period.

The winners of the awards were approved by the Air Force Systems Command's seven-man Industrial Zero Defects Council which includes representatives from the Electronics, Aeronautical and Ballistic Systems Divisions.

The firms selected for Achievement Awards are:

General Electric Co., West Lynn, Mass.

Hercules Powder Co., Kenvil, N. J.

General Electric Co., Evendale, Ohio

Kaiser Aerospace & Electric Corp., San Leandro, Calif.

Martin - Marietta Corp., Middle River, Md.

Lockheed Missile & Space Co., Sunnyvale, Calif.

Martin - Marietta Corp., Denver, Colo.

Hercules Powder Co., Magna, Utah

RCA Communications Systems Div., Camden, N. J.

Hughes Aircraft Co., Culver City, Calif.

RCA Missile & Surface Radar Div., Moorestown, N. J.

Douglas Aircraft Co., Missiles & Space Systems Div., Santa Monica, Calif.

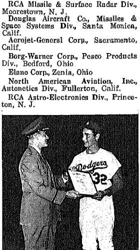
Aerojet-General Corp., Sacramento, Calif.

Borg-Warner Corp., Pesco Products Div., Bedford, Ohio

Elano Corp., Zenia, Ohio

North American Aviation, Inc., Autonetics Div., Fullerton, Calif.

RCA Astro-Electronics Div., Princeton, N. J.



Maj. Gen. Ben I. Funk, Commander of the Air Force Systems Command's Space Systems Division in Los Angeles, Calif., presents Los Angeles Dodgers pitching ace, Sandy Koufax, a Zero Defects certificate for his perfect game against Chicago on Sept. 9, 1965.

In presenting the award, General Funk told the Dodger star that "The Air Force tries for a 'perfect game' every time we launch a space vehicle."

Phase-Out Continues at Mobile AMA

Phase II plans of the phase-out of logistics operations at Mobile Air Materiel Area (AMA), Brookley Air Force Base, Ala., have been announced by the Air Force Logistics Command. This action is a further implementation of the Secretary of Defense's directive of Nov. 19, 1964, closing Mobile AMA.

The plans for Mobile included in Phase II cover the specific logistics responsibilities and supporting personnel changes to take place from January 1966 through June 1967. Transfers will be made as follows:

To Sacramento AMA, McClellan AFB, Calif.:

- Management and supply of approximately 11,000 materiel management coded items peculiar to: F-84, F-86, F-100, F-104, F-105, F-111, T-33, T-39, 416L (AC&W), 474L (BMEWS), 496L Spacetrack, Atlas boosters and rocket engines.
- Maintenance of F-105 aircraft including the Military Support Unit.

To San Antonio AMA, Kelly AFB, Tex.:

- Management and supply of approximately 12,500 materiel management coded items peculiar to: B-58, F-102, F-106, F-5, T-38, C-131, aircraft engines (jet and reciprocating), electrical and electronic test equipment, and aerospace ground equipment.
- Maintenance of engine accessories (FSC 2995), miscellaneous engine components (FSC 2835), air-conditioning and refrigeration equipment (FSG 41), pipe and tube (FSC 4730), aircraft maintenance equipment (FSC 4920), aircraft alarm systems (FSC 6340), valves (FSC 4810/20) and area support for aircraft and support equipment.

To Odgen AMA, Hill AFB, Utah:

- Management and supply of approximately 7,000 materiel management coded items peculiar to: LGM-25 Titan, LGM-30 Minuteman, Aerojet engines, F-4, F-101, B-26 aircraft, CIM-10 Bomarc, photographic equipment, training devices and landing gear systems.
- Maintenance and supply through reprogramming of resources in support of F4C aircraft.

To Oklahoma City AMA, Tinker AFB, Okla.:

- Management and supply of approximately 12,000 materiel management coded items peculiar to: B-52, C-97, C/KC-135 aircraft, ADM-20

(Continued on page 20)

NOTES FOR EDITORS

Briefed below are some events and projects within the Department of Defense which may be of interest to writers and editors. If further information on any of these topics is desired, please write to Chief, Magazine and Book Branch, Office of Assistant Secretary of Defense (Public Affairs), Washington, D. C. 20301.

MAP OPERATING THROUGHOUT THE WORLD

The Department of Defense Military Assistance Program (MAP) is supporting and encouraging civic action projects in more than 25 countries throughout the world. Civic action projects are those in which the military forces of a nation undertake activities which contribute to the economic and social development and strengthen the ties between the military and civilian communities.

Since inception of the program in 1961, activities have included providing construction material and equipment for troops building 147 kilometers of highway in Brazil; building 21 health centers and dispensaries in remote areas of Colombia; repairing and constructing roads in Guatemala and Paraguay; building hundreds of classrooms and aiding in the construction of kitchens, sewer systems and hospitals in Korea; distributing and holding language classes in addition to the primary duties of airfield, dam and road construction in Thailand; and drilling wells and increasing agricultural production in Vietnam.

ARMY EXPANDING TRAINING ESTABLISHMENT

An expansion of the Army training system began last month to provide for an input of 408,000 active Army trainees during Fiscal Year 1966, an increase of 213,000 over Fiscal Year 1965. The expansion will provide the necessary soldiers for the planned increase of 235,000 in the active Army as well as replacement of normal attrition.

The program includes the establishment of new reception and training centers at Fort Benning, Ga., and Fort Bliss, Tex., and increased capacities at present Army training centers and Army service schools. The expansion will include training of over three times as many officer candidates and broadening of the programs leading to a commission.

ARMY VERSION OF SIDEWINDER FIRED SUCCESSFULLY

Chaparral, an Army air defense weapon system currently under development, has undergone successfully guided firings at the Naval Ordnance Test Center, China Lake, Calif.

The Chaparral is designed to protect forward area Army forces against low altitude air attack. The system utilizes a modified Army self-propelled vehicle as a mount for launching the Navy-developed Sidewinder 1-C missile, using an infrared guidance system and slightly modified for the surface-to-air application. By maximum use of existing missiles and "off-the-shelf" support equipment, the Army is minimizing costs and development time.

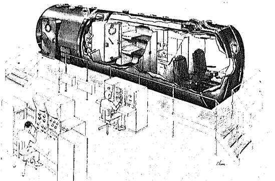
OXYGEN-HELIUM ATMOSPHERE BEING TESTED

Four U. S. Air Force flying officers began a 68-day test of an oxygen-helium combination as a possible space vehicle atmosphere on Oct. 4 when they entered a space cabin simulator at the USAF School Aerospace Medicine, Brooks AFB, Tex. The experiment, the longest such test to date, is being conducted in cooperation with the National Aeronautics and Space Administration and information gained will be used in connection with future manned space programs.

For the first eight days the test crew was at ground level altitude breathing a normal ground level atmosphere of oxygen and nitrogen. On October 13 they went to a simulated altitude of 27,000 feet for the duration of the test.

The simulator in which the test crew is working is a cylindrical, double-walled, low pressure altitude chamber 30 feet long and nine feet in diameter. The cabin is divided into two sections, the main test cell and the air lock. The space between the double walls is maintained at a lower pressure than the main test cell to insure that any leakage from the test environment is outward. Conditions within the simulator are monitored at an outside master control console.

The test is the first of four groups of experiments scheduled to run through August 1966.



An artist's conception of the manned space cabin simulator which four Air Force aircrew officers entered on Oct. 4 for a 68-day atmospheric test of 70 per cent oxygen and 30 per cent helium at the U. S. Air Force School of Aerospace Medicine, Brooks AFB, Tex. Information gained from the test will be used in connection with future manned space flight. (See last item, Notes for Editors.)

Reduction in Subscription Rate Military Specs and Standards

The Navy Department has announced that, effective January 1, 1966, new and renewal subscriptions for Military Specifications and Standards, which are listed in the Department of Defense Index of Specifications and Standards (DODISS) will be available to subscribers at the reduced rate of $4.50 per Federal Supply Class for each subscription, in lieu of the present rate of $6.00 per subscription. Refunds will not be made on subscriptions received prior to January 1.

Subscriptions provide for the automatic distribution to the subscriber of all new or revised Military Specifications and Standards in each class for which a subscription has been placed. They will continue to be accepted on a Federal Supply Classification basis and may cover a single class or as many individual classes as the subscriber chooses.

Requests may be forwarded to the Director, Navy Publications and Printing Service Office, Building 4, Section D, 700 Robbins Avenue, Philadelphia, Pa., and must be accompanied by a certified check or postal money order made payable to the Treasurer of the United States, in an amount sufficient to cover each subscription computed at $4.50 for each class desired. The subscriber should identify the individual classes covered in each subscription by the class number and title listed in the DOD Cataloging Handbook H2-1, "Federal Supply Groups and Classes."

Navy Establishes Pollution Control Office

The Navy has responded to President Johnson's request that all land under Government control be cleared of pollutant-causing factors by establishing a new office to study pollution problems and develop projects to control air and water pollution on the Navy's five million acres of land.

In charge of the new unit, known as the Bureau of Yards and Docks Pollution Control Office, is Commander James D. Day, Jr., who directs the Facilities Projects Division at the Bureau.

Commander Day said the Bureau has already developed a $14 million program for 1967 to construct facilities which will correct some of the known pollution violations.

In addition, air and waste water discharges at all naval shore establishments will be regularly checked for pollution.

New Battle Dress for AF Planes

For the first time since World War II, tactical aircraft of the U.S. Air Force are being painted in multicolored camouflage patterns designed to reduce enemy visual detection.

The camouflage patterns are being applied to operational strike and support aircraft of the Tactical Air Force including combat planes now operating in Vietnam.

Among aircraft receiving the new battle dress are the McDonnell F–4C Phantom II, the North American F–100 Super Sabre, the Lockheed F–104 Starfighter, the Republic F–105 Thunderchief and the Lockheed C–130 Hercules.

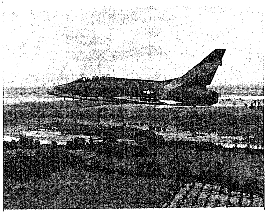
The Air Force-wide program is under the supervision of the Air Force Logistics Command (AFLC). Mobile Air Materiel Area is monitoring the project including development of patterns.

To date, the camouflage paint program has been limited to tactical and theater support aircraft. However, studies are under way to determine application to other Air Force aircraft.

Most of the painting takes place as aircraft return to their logistics homes—AFLC air materiel areas—throughout the United States for routine periodic overhaul.

Camouflage painting, arranged in patterns of brown, two shades of green and light gray, gives aircraft at modest altitudes the facility to blend into landscapes below them. This reduces the possibility of their being spotted by enemy interceptors at higher altitudes. A light gray underside helps planes at high altitudes blend into the sky, making ground detection difficult.

The use of camouflaged paint to break up the form or outline of aircraft was widely practiced in World War I and II.



A USAF F–100 fighter bomber wears a coat of new camouflage paint. The new look, designed to reduce enemy visual detection, is being applied to operational strike and support aircraft of the tactical air forces.

DEFENSE PRIME CONTRACT AWARDS TO SMALL BUSINESS

(Amounts in Thousands)

	July-Aug. 1965	July-Aug. 1964
Procurement from All Firms	4,867.5	4,008.4
Procurement from Small Business Firms	972.8	805.5
Per Cent Small Business	20.0	19.7

SPEAKERS CALENDAR

OFFICE OF THE SECRETARY OF DEFENSE

Dr. Charles M. Herzfeld, Dir., Advanced Research Projects Agency, at American Astronautical Society Meeting, Miami, Fla., Nov. 26.

ARMY

Lt. Gen. William F. Cassidy, Chief of Engineers, at Commonwealth Club Meeting, San Francisco, Calif., Nov. 26.

Gen. Frank S. Besson, Jr., Commanding General, U. S. Army Materiel Command, at Twin Cities Association of the U. S. Army Meeting, Minneapolis, Minn., Dec. 8.

NAVY

RAdm. O. D. Waters, Jr., Oceanographer of the Navy, at Bureau of Commercial Fisheries and University of Miami, Coral Gables, Fla., Nov. 20.

RAdm. Eugene P. Wilkinsen, Dir., Submarine Warfare Div., Office, Chief of Naval Operations, at 23rd U. S. Navy Symposium on Underwater Acoustics, Washington, D. C., Nov. 30.

VAdm. I. J Galantin, Chief of Naval Material, at Anniversary of Naval Material Support Establishment, Washington, D. C., Dec. 2; at Ship Maintenance Conference, Naval Electronics Laboratory, San Diego, Calif., Dec. 15.

VAdm. C. B. Martell, Dir, Anti-Submarine Programs, Office, Chief of Naval Operations, at Joint Meeting of Chamber of Commerce and Reserve Officers Assn., South Bend, Ind., Dec. 2.

RAdm. Roy S. Benson, Asst. Dep. Chief of Naval Operations/Dir. of Naval Administration, at Canton Traffic Club Meeting, Canton, Ohio, Dec. 7.

AIR FORCE

Lt. Gen. T. P. Gerrity, Dep. Chief of Staff, Systems & Logistics, at Martin Co., Orlando, Fla., Dec. 1.

Maj. Gen. I. L. Branch, Commander, Air Force Flight Test Center, at Rotary Club Meeting, Inglewood, Calif., Dec. 3.

Gen. J. P. McConnell, Chief of Staff, at Economic Club, Detroit, Mich., Dec. 6; at National Security Industrial Assn. Meeting, Los Angeles, Calif., Jan. 13.

Maj. Gen. B. I. Funk, Commander, Space Systems Div., Air Force Systems Command, at Kappa Sigma Meeting, Dallas, Tex., Dec. 6.

Gen. B. A. Schriever, Commander, Air Force Systems Command, at National Security Industrial Assn. Meeting, Washington, D. C., Dec. 8.

Maj. Gen. M. C. Demler, Commander, Research & Technology Div., Air Force Systems Command, at Technology Symposium, Miami Beach, Fla., Dec. 14–16.

DSA Conducting Study to Improve Contractor Inventory Utilization

The Defense Supply Agency, assisted by the three Military Departments, is studying ways and means to improve the utilization of contractor inventory by the Services and the utilization by contractors of military releasable assets. This study, which covers materiel in all commodity areas other than industrial plant equipment, is being conducted by the Contractor Inventory Utilization Group (CIUG), a DOD chartered, joint service group.

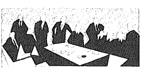
A test is in progress to determine the feasibility of using existing centralized electronic data processing capabilities for mechanically screening and identifying both assets and requirements. The immediate objectives toward increasing property utilization are (1) improved item identifications and (2) a more rapid interchange of data by and between the Military Services and Defense contractors.

Initially the test was limited to the participation of five contractors selected by the Military Departments: North American Aviation, Inc., Columbus Ohio; Lockheed Missile and Space Company, Sunnyvale, Calif.; Martin Company, Baltimore, Md.; Hughes Aircraft Company, Palo Alto, Calif.; and Western Electric Company, Winston-Salem, N. C. In order to broaden and diversify the input of contractor inventory, the CIUG expanded contractor participation to include all those under the cognizance of the Inspector of Naval Material, Los Angeles, Calif.; the Air Force Contract Management District, Los Angeles; and elements of three Army commands, the Missile, Aviation and Electronics Commands.

One electronic data processing technique being employed for item identification of contractor inventory is provisioning screening. This is a process for screening manufacturers' part numbers (P/N's) and/or Federal Stock Numbers (FSN's) against a central catalog file to either obtain or validate an existing FSN. From January through June 1965 more than 100 per cent increase in identifying contractor inventory items resulted from the use of this technique.

Another technique in current use is the centralized screening of assets against requirements—utilizing the FSN's developed from provisioning screening. The data input to the central file containing assets and requirements is maintained on a DOD-wide basis. In addition to indicating exact matches, it also provides the capability for matching other than the preferred item, thus enabling the potential user to consider interchangeable items when the preferred item is not available.

Although some specific benefits to both contractors and the Military Departments have been identified with mechanized screening, the test results to date are not conclusive enough to determine that the mechanical screening of contractor inventory items is more beneficial than the method of manual screening. However, it is contemplated that these benefits will increase as a result of the expanded contractor participation and the greater volume and diversification of contractor inventory assets and requirements.



MEETINGS AND SYMPOSIA

DECEMBER 1965

Fourteenth Annual Wire and Cable Symposium, Dec. 1–3, at the Shelburne Hotel, Atlantic City, N.J. Sponsor: Army Electronics Command. Contact: Milton Tenzer, Symposium Chairman, Electronics Parts and Materials Div., Army Electronics Laboratory, Fort Monmouth, N.J., telephone (Area Code 201) 535-1834.

International Symposium on Differential Equations and Theory of Systems, Dec. 27–30, at the University of Puerto Rico. Sponsors: Air Force Office of Scientific Research, Brown University and the University of Puerto Rico. Contact: Maj. B. R. Agins (SRMA), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C., telephone (Area Code 202) OXford 6-1302.

JANUARY 1966

Unguided Rocket Ballistics, Jan. 11–13, at Texas Western College, El Paso, Tex. Sponsor: Army Electronics Research and Development Agency. Contact: Vertis C. Cochran, Army Electronics Research and Development Agency, White Sands Missile Range, N.M.

Research Effectiveness as Related to Vehicles, Jan. 28–29, at Detroit, Mich. Sponsor: U.S. Army. Contact: Paul D. Denn, Chief, Research Div., Army Mobility Command, Warren, Mich., telephone (Area Code 313) 750-1000.

International Symposium on Information Theory, Jan. 31–Feb. 2, at the University of California at Los Angeles, Calif. Co-sponsors: Air Force Office of Scientific Research and Information Theory Group of the Institute of Electrical and Electronics Engineers. Contact: Prof. J. Carlyle, UCLA, Los Angeles, Calif., telephone (Area Code 213) 478-9711, ext. 7181.

FEBRUARY 1966

Eighth Joint Industry-Military-Government Packaging and Materials Handling Symposium, Sheraton Park Hotel, Washington, D.C., Feb. 28–March 2. Sponsors: National Security Industrial Assn., Office of Secretary of Defense, Military Services, Department of Commerce, NASA, GSA and AEC. Contact: W. J. Monaghan, NSIA, Suite 800, 1030 15th St., N.W., Washington, D.C.

MARCH 1966

Conference on Functional Analysis, March 28–April 1, at the University of California, Irvine, Calif. Co-sponsors: Air Force Office of Scientific Research and the University of California. Contact: R. G. Pohrer (SRMM), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C., telephone (Area Code 202) OXford 6-5248.

Second International Symposium on Aerobiology, March 29–30, at Chicago, Ill. Sponsors: U.S. Army and Illinois Institute of Technology Research Institute. Contact: Elwood K. Wolfe, Director of Technical Services, Fort Detrick, Frederick, Md., telephone (Area Code 301) 663-4111, ext. 2214.

Bionics Symposium 1966, dates undetermined, at Sheraton Hotel, Dayton, Ohio. Sponsors: Aerospace Medical Research Laboratory, Aerospace Medical Div. and Avionics Laboratory, Research and Technology Div., all of which are elements of the Air Force Systems Command. Contact: Dr. H. L. Oeistreicher (MRBAM), Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio, telephone (Area Code 513) 253-7111, ext 3-6108.

APRIL 1966

Second Symposium on Marine Bio-Acoustics, April 6–8, at American Museum of Natural History, Central Park West at 79th St., New York City and Naval Training Device Center, Port Washington, N.Y. Sponsor: Naval Training Device Center. Contact: F. E. Wolf, Jr., Research Program Manager, Naval Training Device Center, Port Washington, N.Y., telephone (Area Code 516), PO 7-9100, ext. 550.

Symposium on Generalized Networks, 14th in a series of international symposia organized by the Polytechnic Institute of Brooklyn, Microwave Research Institute, April 12–14, at New York City. Sponsors: Air Force Office of Scientific Research, Office of Naval Research and the Army Research Office, Society for Industrial and Applied Mathematics and the Institute for Electrical and Electronics Engineers. Contact: Lt. Col. E. P. Gaines, Jr., (SREE), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C., telephone (Area Code 202) OXford 6-3671.

Twentieth Annual Frequency Control Symposium, April 19–21, at the Shelburne Hotel, Atlantic City, N.J. Sponsor: Army Electronics Laboratories. Contact: M. F. Timm, Solid State & Frequency Control Div., Army Electronics Laboratories, Fort Monmouth, N.J., telephone (Area Code 201) 535-1728.

SPRING 1966

Second International Symposium on Airborne Infection, dates undetermined, at Baltimore, Md. Sponsors: Department of the Army and The Johns Hopkins School of Medicine. Contact: Elwood K. Wolfe, Director of Technical Services, Fort Detrick, Frederick, Md., telephone (Area Code 301) 663-4111, ext. 2214. (Rescheduled from October 20–21, 1965.)

Air Force, AEC to Sponsor Radioisotope Symposium in Ohio

A symposium on "Radioisotope Applications in Aerospace," co-sponsored by the Air Force Systems Command and the Atomic Energy Commission, will be held at the Sheraton-Dayton Hotel, Dayton, Ohio, Feb. 22–24.

The symposium will be directed by AFSC's Flight Dynamics Laboratory at Wright-Patterson AFB, Ohio, where the classified sessions will be held.

Colonel George T. Buck, Director of the Flight Dynamics Laboratory and E. E. Fowler, Director of AEC's Division of Isotope Development, are co-chairmen of the symposium.

The symposium is being held to exchange information, promote the use of radioisotopes and acquaint military and industrial managers with their potential.

More than 500 specialists in the use of radioisotopes are expected to attend the three-day meeting.

Research & Development Achieved by Unique Partnership at AF Flight Test Center

by

Maj. Gen. Irving L. Branch
Commander, Air Force Flight Test Center

Take 301,000 isolated acres on the western edge of southern California's 13,500-square mile Mojave Desert.

Sprinkle with several hundred million dollars worth of necessary buildings and complex equipment. Garnish with billions of dollars worth of unusual aircraft.

Spice with about 10,000 men and women—nearly all highly skilled and engrossed in their endeavors—about half of whose male members wear Air Force, Army or Navy uniform.

Mix judiciously and what have you got? A unique national defense partnership formally known as the Air Force Flight Test Center (AFFTC) at Edwards Air Force Base.

This proving ground for tomorrow's military aerospace craft daily demonstrates the results of and need for effective teamwork.

AFFTC is among 11 far-flung yet kindred centers and divisions doing specialized experimental work under the Air Force Systems Command (AFSC), headquartered at Andrews Air Force Base near Washington, D. C. Their united effort is essential in carrying out AFSC's mission—research and development of the nation's aerospace weapons systems (aircraft, missile, electronic and space)—from drawing board to operational readiness.

AFFTC teamwork with its AFSC brothers and Air Force cousins recently won a Pentagon salute—the Air Force Outstanding Unit Award to the center's 500-member military and civilian tri-command (Systems, Strategic Air and Air Defense) SR-71/YF-12A Test Force. The award was for "exceptional professional competence, initiative and devotion to duty in developing and testing" the Air Force's most advanced reconnaissance and interceptor aircraft from last January 1 to May 2. Both still are undergoing development testing. Also cited was the team effort in proving the 2,000 m.p.h. YF-12A interceptor the world's fastest with four new speed and altitude record flights May 1.

Illustrative of AFFTC-Air Force-Federal-civilian-industry partnership was the completion—a month ahead of time—of 11 months of the Air Force's most intensive functional and reliability testing of an airplane ever. The test involved Lockheed Georgia Company's C-141 Starlifter global jet transport, an increasing number of which are becoming operational for the Military Air Transport Service.

The 160-ton fanjet freighter—one of three at Edwards and five undergoing tests elsewhere at the time—completed its 2,500th and final hour of test flight last May 14. Averaging seven-and-a-half hours in the air, seven days a week, the craft pile up nearly twice the combined flying time of the other seven air freighters and six times as much as any one of them. The C-141 test program was the first in which Air Force, Federal Aviation Agency and contractor personnel worked together to qualify an aircraft both as a military and commercial cargo carrier.

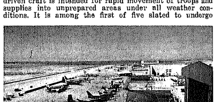
AFFTC's readiness to work in double and triple harness with Federal agencies and private industry extends to its fellow Services—Army and Navy. Close cooperation with the Navy has been what might be called "doin' what comes naturally" in a 14-year association with the Naval Air Facility at El Centro, Calif. That's how long AFFTC's 6511th Test Group (Parachute) has been established there as a Navy partner in what evolved as the Defense Department Joint Parachute Test Facility.

The 6511th, which includes civilian personnel, tests and evaluates newly developed and experimental parachutes for troop jumps, supply drops, pilot escape systems and missile and capsule recovery programs. Every parachute designed for human use is put through at least 200 test dummy drops and 500 jump tests by parachutists.

It was at El Centro that AFFTC staked a notable cooperative claim to fame in air dropping what is believed a world record of 70,195 pounds of simulated cargo from a C-141. Seven large pallets—platforms nine feet wide and eight feet long, loaded with iron and steel bars—each weighing some 10,000 pounds, were shoved out the tail section as the craft flew 170 mph at an altitude of 5,000 feet. All seven landed undamaged within a half-mile area, wafted to earth by three 100-foot diameter parachutes on each pallet.

The record drop climaxed a continuing series of heavy cargo drop tests at El Centro involving Lockheed pilots and engineers, Army and Air Force loadmasters, Air Force parachutes and riggers, data acquisition equipment, instrumented parachute ranges and Navy photographic support. Meanwhile, a similar joint venture covering the whole gamut of C-141 cargo equipment and troop drops has been going on since mid-May at Fort Bragg, Fayetteville, N. C. Working together there are AFFTC and Lockheed test pilots and engineers, MATS maintenance crews and Army logistics experts and paratroops.

But let's get back to Edwards and more evidence in inter-service partnership. Illustrative is last July's start of some 18 months of extensive testing of the biggest and newest of a new kind of military transport. Centerpiece of this concerted concern is the tilt-wing XC-142 short take-off and landing (V/STOL) craft designed for Air Force, Army and Navy use. AFFTC's XC-142 tri-service test force of 200 includes test pilots, engineering and technical experts from the Marine Corps as well as from the three Services. The unique four-engine, propeller-driven craft is intended for rapid movement of troops and supplies into unprepared areas under all weather conditions. It is among the first of five slated to undergo



Flight line at the Air Force Flight Test Center, Edwards AFB, Calif., where all new U. S. Air Force aircraft have been tested since 1946.

evaluation and performance tests at Edwards under rugged field conditions comparable to those it might encounter in combat.

At the same time, AFFTC works closely with the Army Aviation Test Activity, which conducts and monitors a variety of projects, including the XV–5A fanjet V/STOL built for the Army by Ryan Aeronautical and General Electric Companies. Extensive AFFTC support in the XV–5A program includes vital chase and pace planes and pilots, documentary and engineering photography and miscellaneous services. This goes not only for the Army but the contractors as well.

An even closer working partnership developed in testing the CH–47A Chinook helicopter—the Army's biggest. It involves AFFTC and Army test pilots and cross training of both.

A striking example of close AFFTC cooperation with private industry is the XB–70 test program. Air Force and contractor pilots have shared the controls on nearly all of the 19 test flights thus far in the huge research jet built by North American Aviation, Inc. Perhaps by the time you read this, the six-engine delta wing jet will have proved its design capability of cruising at 2,000 mph (three times as fast as sound) at 70,000 feet. The first of the two 225-ton research craft built for the Air Force neared that goal last June 30 by reaching 1,870 mph (Mach 2.85) at 68,000 feet on its 14th test hop. It was first flown Sept. 21, 1964. All four pilots—two Air Force and two North American—have been checked out in the first four flights of the newer and second XB–70 at Edwards. Its maiden flight was made last July 17.

No discussion of AFFTC joint endeavor could be complete without mention of the X–15 rocket research program. Former Air Force Secretary Eugene M. Zuckert called it "unquestionably one of the most successful partnerships ever" during an Edwards visit two years ago. He stressed the close Air Force-National Aeronautics and Space Administration (NASA) cooperation in which "design altitude and speed have been surpassed by wide margins."

More than 140 research flights have been made in the world's fastest and highest flying winged aircraft since the start of the joint space-probing program more than six years ago. Three of the North American Aviation-built Air Force X–15's have since been used as flying laboratories. Much knowledge and data have been gained in studies of aerodynamic, structural and physiological problems of re-entry.

Lieutenant Colonel Robert M. White flew the X–15 to an official world record height of 314,750 feet (59.6 miles) on July 17, 1962, making him the Air Force's first winged astronaut. Major Robert A. Rushworth and Captain Joe H. Engle have joined him in that distinctive military rating with research flights more than 50 miles high. NASA's Joseph A. Walker set separate unofficial speed and altitude records of 4,104 mph and 354,200 feet (67 miles) on June 27, 1962, and Aug. 22, 1963, respectively. Extra fuel tanks and other modifications of one of the X–15's is expected to enable it to fly at 5,400 m.p.h., eight times the speed of sound.

Nearly every kind of airplane used by the Air Force sice 1946 has been flight tested at Edwards. Improved versions of models already in use (operational) as well as entirely new and experimental (research) ones are put through their aerial paces to determine whether they meet exacting Air Force needs. The complexities of flight testing become apparent with an understanding of the Air Force functional approach to its weapons systems—manned and unmanned. Aircraft are generally regarded as one of two kinds of systems, depending on function. Combat planes (fighters, bombers, interceptors) are weapons systems. Non-combat (trainers, transports, reconnaissance, weather) types are support systems. Various sections of the aircraft (tail assembly, landing gear, engine, fuselage, heating), called subsystems, are complex systems themselves. They first undergo rigorous individual ground and air testing before installation in the aircraft for which they are designed. Later the process is repeated when the prototype aircraft is ready for testing as a complete system.

Tests to determine the independent and collective performance, stability and reliability of systems, subsystems and components are designed to cover many vital operational requirements. Among them are compatibility of components; capabilities and limitations under varied actual or simulated climatic conditions; durability and acceptability of maintenance qualities; parts use rate; support facility needs; personnel and training demands.

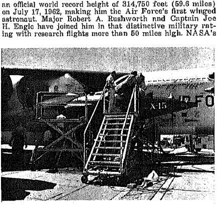
Meanwhile, reams of data—electronically and otherwise gathered—are sifted and studied for the all important continual evaluation necessary through every stage of research and development.

Obviously very little of this is a one-man job. Teamwork is the key that unlocks the door to progressive research, particularly at the Air Force Flight Test Center.

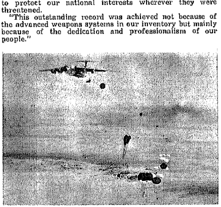
Our efforts were most aptly summed up by General John P. McConnell, Air Force Chief of Staff, in marking the Air Force's 18th Anniversary as an independent service.

"Keeping pace with the dramatic advances in technology, the Air Force has served as the nation's foremost deterrent to aggression and as a versatile tool in helping to protect our national interests wherever they were threatened.

"This outstanding record was achieved not because of the advanced weapons systems in our inventory but mainly because of the dedication and professionalism of our people."



The X–15 manned research rocket plane being prepared for an extreme altitude mission at the Air Force Flight Test Center



Parachutes blossom high over Southern California's El Centro Naval Air Facility as a USAF C–141 transport aircraft drops a record 70,195 pounds.

FROM THE SPEAKERS ROSTRUM

Hon. Cyrus R. Vance

Address by Honorable Cyrus R. Vance, Deputy Secretary of Defense at the Annual Dinner of the National Security Industrial Association, Washington, D. C., Oct. 7, 1965.

I deeply appreciate this opportunity to speak before a group so concerned as you are with the security of our country, and so directly involved with the preservation of its strength and freedom.

Exactly five weeks ago tonight—in a distant country—a political document appeared.

It was written by the Defense Minister of the most populous nation on earth.

It was written by Lin Piao, the Vice Chairman of the Central Committee of the Chinese Communist Party—Vice Premier of Red China and the Minister of National Defense.

Ostensibly, it is an article commemorating the 20th anniversary of the defeat of Japan in World War II. But that was merely a convenient occasion for its publication. For it is no ordinary commemorative article.

I want to talk to you about that document tonight. For it tells us not only what Peking's intentions are in Asia—not only what Peking's intentions are in Vietnam—not only what Peking's intentions are toward the United States—but what Peking's plans are for the whole expansion of world communism.

The document begins with a lengthy analysis of the communist revolution in China. Lin Piao states bluntly:

"It was on the basis of the lessons derived from the people's wars in China that Comrade Mao Tse-tung, using the simplest and most vivid language, advanced the famous thesis that 'political power grows out of the barrel of a gun.' He clearly points out: The seizure of power by armed force, the settlement of the issue by war is the central task and highest form of revolution. This Marxist-Leninist principle of revolution holds good universally, for China and for all other countries."

Lin Piao then goes on to note that the Chinese communist revolution differed from the Russian revolution in one essential respect. The Russian revolution, he says, "began with armed uprisings in the cities, and then spread to the countryside; while the Chinese revolution won nationwide victory through the encirclement of the cities from the rural areas, and the final capture of the cities."

Now, he comes to his central point. The "rural areas of the world" today, he asserts, are Asia, Africa and Latin America. The "cities of the world" are North America and Europe.

Just as communism in China, says Lin Piao, succeeded by capturing the countryside and then encircling and defeating the cities, so the global communist movement will ultimately succeed first by capturing Asia, Africa and Latin America—thereby encircling North America and Western Europe—and then by finally and decisively defeating the United States and its western allies.

Win Asia, Africa and Latin America through "wars of national liberation," says Lin Piao, and the United States and its western allies will be surrounded, will be encircled, will be overwhelmed."

And *where* is all this to begin? he asks.

It has already begun, he replies. And the place in which it has begun is Vietnam.

Vietnam, says Lin Piao, is now the "focus" of the revolutionary movement against the United States. No matter what action America may take in Vietnam, he adds, the Communist Chinese determination is "unshakable" to drive the United States out.

But it is not Peking that is fighting in Vietnam; it is Hanoi. Mao is not risking his own troops to achieve his ends. Rather, Hanoi is being used to attempt to prove the validity of his thesis.

For the whole point of Mao's doctrine is that Hanoi and the Viet Cong should fight on; that they should reject any offers of reasonable settlement or negotiation; that they should be prepared to wage a prolonged and dirty war—whatever its cost in North Vietnamese blood, whatever its cost in North Vietnamese well-being.

Hanoi might well ponder whether its future is best secured by fully submerging its own separate interest to Peking. The North Vietnamese people deserve a better future than that.

Meanwhile, the leaders in Hanoi—much to Peking's pleasure—continue to make a reasonable settlement impossible. They continue their aggression in the south. They continue to infiltrate soldiers, equipment and supplies across the border. They continue to employ the twin pressures of temptation and terrorism—tempting the peasants to renounce their loyalty to their village leaders in return for hollow promises, and terrorizing them if they refuse.

There could be no clearer justification of why we are standing firm in our resolve to help defend the 14 million people of South Vietnam against communist aggression and subversion from the north.

What is the United States policy there?

Our policy is simple and straightforward. It is not complicated by any doctrinate theories of world domination.

First, we are determined to keep our commitment to the people of South Vietnam. We are going to continue to assist the South Vietnamese to resist aggression. We are going to continue to make it clear to Hanoi and to Peking that terrorism, murder, subversion and infiltration from the north cannot—and will not—succeed.

As President Johnson has pointed out:

"We are . . . there to strengthen world order. Around the globe from Berlin to Thailand are people whose well being rests in part on the belief that they can count on us if they are attacked. To leave Vietnam to its fate would shake the confidence of all these people in the value of an American commitment and in the value of America's word. The result would be increased unrest and instability, and even wider war."

Second, we are committed to help create a better life for the people of South Vietnam. We are engaged in a major program of economic and social development there, and we want to see it extended to the whole South Asia region, including North Vietnam.

Everything that we do in Vietnam

is governed by those simple reasons for being there.

Our goal is a peaceful settlement. We are ready—now—to go to the negotiating table. We lay down no preconditions for such discussions. We seek a cessation of aggression by North Vietnam. We seek a just peace—and we have made that offer clear on many occasions. We seek the withdrawal of *all* foreign forces—including our own—from South Vietnam once peace has been restored. And we seek a peace that guarantees freedom of choice for the South Vietnamese people.

Our purpose is firm; our patience is long; and our perseverance is unshakable.

But, as both Hanoi and Peking have pointed out, the issue is larger than merely Vietnam.

General Giap, the North Vietnamese strategist who defeated the French at Dien Bien Phu, has put the matter candidly: "South Vietnam is the model of the national liberation movement of our time. . . . If the special warfare that the U. S. imperialists are testing in South Vietnam is overcome, then it can be defeated anywhere in the world."

And—as we have seen—Lin Piao describes the struggle in Vietnam as merely the curtain-raiser in the whole global drama of communist expansionism.

The issue, then, in Vietnam, important as it is, is not the only task facing the United States and its partners in freedom around the world.

It is an essential task. But is not the total task.

The total task of free men on this planet is to preserve and nurture freedom *everywhere* that it is growing.

Lin Piao sees a major crisis in human society in the second half of the 20th Century; he sees it taking place on the perimeter of the industrialized world—in Asia, in Africa and in Latin America.

I think we can agree with him on that.

Let us examine why.

We can begin by reminding ourselves that the communist mind is a curious combination of ideological rigidity—and tactical suppleness.

The communist mind is, at one and the same time, philosophically closed—and pragmatically open.

In the past half century we have witnessed an imaginative display of aggressive communist tactics.

The goal has always been the same: political domination. But the path to that goal has often switched direction.

In our own lifetime, communist tactics have ranged through a broad and brutal spectrum: everything from outright occupation by the Red Army in Eastern Europe—through conventional aggression in Korea—to the guerrilla operations in Greece, Malaya, the Philippines and now in Vietnam.

Communist tactics have sometimes fomented revolutions and at other times have captured those initiated by others.

Communist tactics have learned to be as much at home with legal means as with illegal means; with sophisticated societies as with primitive ones; with rightist dictators as with leftist demagogues.

Thus, if one surveys the total communist movement of the past half-century, one cannot fail to be struck with a profound bit of irony: that the communists in their ultimate view of history are almost insufferably dogmatic and doctrinaire. But in their efforts to manipulate that history, they are almost incredibly pragmatic and practical.

What, then, is *our* answer to the communist manifesto of Mao Tse-tung, as written by Lin Piao?

First, our answer is that we agree that the "focus" of the challenge lies at the moment in Vietnam.

But the government of Vietnam and the United States will not be defeated by communist aggression from the north. We will continue our support of the people of South Vietnam until a just and reasonable settlement is reached—whether by agreement at a conference table or by a cessation of the aggression, as in Malaysia, the Philippines and Greece.

Secondly, we agree with Mao that the lands arching across the southern half of the globe—Asia, Africa and Latin America—are to play a decisive role in the future of humanity.

But we disagree that their role is to be the hapless victims of communist externally directed, so-called "wars of national liberation." On the contrary, we believe that these nations desire to remain fully and freely themselves—uncoerced by subversion stage-managed and supplied from without. We believe that these nations desire, with wisdom and dignity, to seek their own national progress in their own national way. And we stand ready to assist them to do precisely that.

Thirdly, we agree that Mao's clear intent is that his brand of communism should eventually surround, encircle and finally cut off and defeat Western Europe and the United States.

But we disagree that that is going to happen. Our defenses are strong, and we remain alert and ready for whatever the future may bring. But more important is the fact that the free nations of the world offer a better future for the individual and a peaceful path to that future.

Finally, we agree with Mao that just as there are cities and countryside *within* nations, so the world at large—in its current uneven rate of technological advance—can be viewed as a series of industrialized centers, surrounded by a less-developed countryside.

But we disagree that the historical process suggests that the global countryside will storm these centers and put them to the torch of communist insurgency.

On the contrary, we believe that the historical process will be precisely the reverse; that the industrialized centers—the fortunate nations of the world—will increasingly seek to bring to the countryside—to the poorer nations of the world—the very assistance and skill that will help these nations to close the poverty gap. And the rich nations will do this by measures that will share talents and resources — by measures that will increase the self-confidence and self-reliance of the poorer nations to achieve their *own* self-sustaining political and economic growth.

In the United States we issue no global manifestos.

But we do indulge in one dream. We do entertain one grand vision. We do look to one great goal.

We are dedicated to continuing the dialogue with the rest of the world that began in an obscure hall in Philadelphia on July 4, 1776.

The men in that hall were revolutionaries.

The men in that hall did not believe that *true* political power can grow out of the barrel of a gun. They believed that true political power *can grow only out of the people themselves*—for that is precisely where it is: Within each individual human being.

Those men did not rant about class struggle. They said bluntly *that all men are created equal.*

Those men did not theorize about a dictatorship of the proletariat. They proposed something far more explosive than that. They declared *that all men had an inalienable right to life, liberty and the pursuit of happiness.*

Those men in 1776 fused, primed and set off a political explosion that has had more ultimate effect on society than all the dictators of history rolled into one.

The fires of that revolution still burn in this country; and the sparks of that revoution still fly, igniting the tinder of human aspiration all over this globe.

One of the greatest challenges to this generation of Americans is to refine the formulas

—for creating the driving sparks,

—for cultivating the leadership talent,

—for unleashing and organizing the earth's bountiful natural resources,

—for breaking down the out-of-date barriers to progress throughout the world. We have an enormous challenge to perfect the formulas to do all of these things to permit what Lin Piao calls "the countryside" to find their way up the rocky path.

We must meet that challenge.

We must offer the more durable stuff of true, creative revolution.

Lin Piao's statement of Communist China's goals for the world is 18,000 words long.

President Johnson has summed up our goals for the world in three simple sentences:

"Our own freedom and growth have never been the final goal of the American dream. We were never meant to be an oasis of liberty and abundance in a world-wide desert of disappointed dreams. Our nation was created to help strike away the chains of ignorance and misery and tyranny wherever they keep man less than God means him to be."

It is for you and me—and all of us on this small, whirling planet—to ensure that this forecast will prevail.

Mr. A. Tyler Port

Excerpts from address by A. Tyler Port, Dep. Asst. Secretary of the Army (Installations & Logistics), at Association of the U. S. Army Annual Meeting, Washington, D. C., Oct. 27, 1965.

* * * *

The Army/industry relationship must be a dynamic one, changing as newly developed strategic concepts dictate it must change: possessing the ability to produce the prosaic military hardware needed in the early 1950's; gearing up to fabricate the sophisticated designs of the post-Sputnik days; or accelerating today to produce the emergency requirements of a Southeast Asia contingency. . . .

A natural consequence of this growth has been the ability of many defense industries to operate without the infusion of large amounts of Government capital and to reach out and seek to better their positions competitively. Competition is the very essence of our free enterprise system and the life blood upon which American industry has always operated.

It has been in this area—the enhancement of competition among responsible defense contractors—that both you in industry and we in the Army still have a way to go before we can claim to have achieved an altogether ideal Army/industry relationship. I think there can be little question but that many hundreds of millions of dollars can yet be saved every year through more intelligent use of competitive procurement. And I think we must move in this direction if we are to realize our fundamental objective of building a better Army.

How can this be done? I would like to suggest that there is one major area in which we have failed to reach a mutually satisfactory solution despite all the effort already devoted toward studies, conferences, symposia and the like that have been designed to cope with the problem. I refer to the matter of transmitting useable advance planning information on Army procurement to interested and potentially interested users.

The national interest is not served when Government castigates industry for failing to see the broad view of national interest if little or no effort is made to communicate that broad view. A climate of mutual trust, understanding and common purpose must develop if we are to achieve the military strength this nation requires. To be fully meaningful, the creation of such an atmosphere must be predicated upon a longer range planning base than is normally communicated to industry through the pro forma release of standard Invitations For Bid or Requests For Proposal. Moreover, if real competition is to prevail in order to effect improvements which we need within the available dollar resources, industry must be provided with the tools by which decision affecting future courses of action can be made with greater confidence. The environment in which competition grows best is one in which industry has a more reliable basis for planning ahead.

I realize that even though we undertake this task we may never obtain the ideal competition of the market place eloquently described by many economists where supply and demand dictate not only the price but also the number of suppliers in any given field. However, it is our objective in the Military to strive toward this goal and to broaden the competitive base of defense industry to the maximum extent possible. To this end a critical review has been undertaken to determine what self-improvement measures are indicated, how these measures can be implemented and how this might, in turn, improve our Defense/industry relationship.

As a result of this review it became evident that the Army was perhaps using too narrow a definition of competition—limiting it oftentimes to the act of bidding itself and neglecting to concentrate real efforts on the development of multiple sources. As I have already indicated, it became apparent that true competition must begin with the accumulation of information on future plans and then must be fostered by the distribution of that information to interested contractors of the defense industry. Thus, if the Army is to expect spirited competition between several responsible contractors in the 1967-1974 time frame, it must begin disseminating the best procurement planning information available in 1966.

This concept, if carried out, really changes the audience to which the Army must speak. It is no longer sufficient to rely on trade journals, Department of Commerce publications and the disseminating of information at the contracting officer level. Procurement planning information must be made available to personnel at the corporate management level charged with evaluating that information, along with other market projections and indices, normally used in reaching major management decisions. The Army must attempt to reach this top management structure of American industry and develop within it a real desire to enter the competition for more items than would normally be the case.

As realists in the every day world of commerce, we recognize that our ability to influence corporate management is directly proportional to the character and veracity of the procurement information disseminated by us. Broad general statements of intent are clearly insufficient as a basis for industry decisions involving the commitment of corporate funds, the expansion of manufacturing facilities and the employment of a larger work force. Risks such as these by industry can only be justified on highly detailed, specific small items of hard intelligence which represent the Army procurement program in the foreseeable future. In other words, a new meaning must be given to the phrese "Defense/industry team" and the Military must adopt more businesslike information procedures in the procurement area which insures that the industrial side of this team has available, to the maximum extent practicable, the same information the Defense member is using for its own planning purposes.

Competitive procurement then is a way of the future requiring a more dedicated effort by all of us to insure such procurement is capable of providing our objective—the acquisition of quality products at the lowest attainable sound price.

If we were to furnish the defense industrialist advance planning procurement information which would permit you to compete on a broad scale, then the Army would, in turn, require the development of a mechanism whereby such information could be quickly, easily and economically transmitted to industry and, at the same time, protect the national security and avoid providing any competitive advantage to any one potential contractor or group of contractors.

Having outlined the dilemma, what have we done to overcome it?

First, during the past two years Advance Planning Briefings for Industry have been aimed at the long range planners of both procurement and research and development. As you know, we teamed with other Military Departments and DOD to have five briefings this year and will have five additional next year.

Also, we have had classified Advance Planning Briefings covering missiles, firepower, electronic warfare, communications, weapons and materiels with others such as data processing, combat surveillance and air defense scheduled to follow.

However, it is in the area of documentation containing advance planning information that the R&D effort has been attacked with more regularity than has the logistics. In fact, this R&D industry information activity led to the belief that similar programs might be possible for logistics. Let me elaborate.

Based on top level guidance, the Army develops a family of interrelated strategic plans and forecasts: the Basic Army Strategic Estimate, the Army Strategic Plan, the Army Force Development Plan, the Army Long-Range Technological Forecast, the Army Research Plan—which result in the delineation of the critical Qualitative Materiel Development objectives toward which the Army must advance if it is to develop the materiel needed to accomplis its global mission.

The Qualitative Materiel Requirements which form the hard core of the information provided under the Qualitative Development Requirements Information (QDRI) program are specific breakouts from the broad objectives established by all these planning documents. The QDRI program, in turn, is a compilation of Army R&D needs in areas in which the Army has been unable to achieve significant breakthroughs and which, if capable of being properly solved by industry, would be welcomed and funded by the Army with enthusiasm.

This new program, therefore, invites of industry unsolicited proposals about our Army of the future, as you see it. QDRI pamphlets are prepared by the Army in an unclassified format whenever possible to permit wide distribution and use by registered industries and represent one more attempt to keep you, the Army contractor, as up-to-date as possible on internal Army developments and trends.

Now, what have we been thinking of doing on the logistics side of the house to enhance the flow of information so necessary for the orderly development of the competitive base we seek?

In June of last year it became apparent that a new approach to this age old problem—the advanced dissemination of procurement information—was required if we were to provide industry something more than the broad generalization of prior years. This information was obviously available within the Army—specifically in the detailed Army Materiel Plans (AMP), however, it was not available in a format which would permit the rapid and extensive distribution we sought.

The AMP is the medium through which the Army can project its mid-range program. It integrates those elements of logistics which directly affect Army materiel, research and development, procurement, deliveries, supply and distribution, production, facilities and engineering repair, overhaul and maintenance, losses and disposals, as well as sales under the Military Assistance Program.

An AMP is developed for every major item having a planned procurement value of $500,000 or more in any one of the eight fiscal years covered by the plan.

Of all the specific information contained in the AMP, we are most interested in those items dealing with the scheduled production of the item, administrative and production lead time, identity of producers and method of procurement.

It might be helpful, perhaps, if you think of the AMP as a matrix.

Into it is fed logistic guidance from the DOD which shapes the magnitude of the requirements by establishing computational parameters and by defining authorized force levels. Based upon this guidance, the number of major force units to be equipped is expressed in the Army Force Development Plan and Army procurements are computed on this authorized force.

This is the type of information we knew would be useful to industry. In a very practical sense it represented the marketing information needed by corporate management in making basic decisions involving capital expenditures. The problem simply stated becomes a question of how this information could be extracted and made available to industry without compromising a host of broader considerations.

In June of last year the initial suggestion for such a plan was put to General Besson, the Commanding General of the U. S. Army Materiel Command. General Besson established the facts that such information was readily available and concurred in the desirability of releasing such information to industry. However, he recommended that a pilot test be executed to evaluate the feasibility of providing such information to industry on a continuing basis. A concept was developed whereby pertinent procurement information of interest to industry could be extracted from Army source documents in a format which would permit distribution to industry.

A program was initiated to place this vital information on an Advance Planning Procurement Information (APPI) form which was to be prepared on each end item to be procured by the expenditure of PEMA (Procurement Equipment and Missiles, Army) funds in the annual budget. This APPI data included pertinent historical and descriptive facts about the end item—the current fiscal year procurement action — and the Army's planned procurements through the following six years. This form also included statistics pertaining to quantities, monthly production rates and anticipated methods of procurement to be employed. As I am sure you can appreciate, what the Army intended to furnish on this APPI form was the best and most detailed planning information available. By the same token, however, such information was not to be something which could be construed as a commitment by the Government to buy the item described. This new test was a real effort on our part to insure we did everything possible to place you in a better competitive position and, of course, glean for ourselves the benefits of increased competition.

Faced with the problem of rapid distribution of the data collected under the new concept, the Commanding General, Army Materiel Command, established Army/Industry Materiel Information Liaison Officers in each commodity command and in the San Francisco and Los Angeles Procurement Districts. He designated the Deputy Commanding General, U. S. Army Materiel Command for Western Operations, as Project Commander. From March 2 through July 15 of this year these offices handled APPI's on a total of 176 items selected for treatment by the commodity commands. A total of 9,395 copies of these APPI's were transferred to industry either through bidder's lists or in response to requests for them from industry. Thus, interested industries were enabled under this test program to initiate action at any one of nine separate geographic locations which would permit them to receive advanced planning procurement information.

Our pilot test has been completed and our analysis reveals that the Army/Industry Materiel Information Program (AIMIP) filled a definite need and promised to return valuable benefits to both parties. Both the commodity commands and industry urged the continuance of AIMIP with increased scope. There is no question in my mind but that the program as conceived and tested provided better information for industry's use in reaching bid/no-bid decisions. I do not pretend that this program is a panacea which will solve all difficulties which face the Army/Industry team in attempting to develop an expanding competitive base from which to operate. However, it is a start; it is a new approach for those of us concerned with logistics and we are already working on ways to improve its usefulness. . . .

In conclusion, let me emphasize that, with these two new Army/industry information programs. we in the Army are attempting to close the information gap between the Army and all industry—whether the action takes place in the research and development area or in the procurement-production phase of the life cycle

In pursuing both programs the Army is acknowledging once again that the money it spends is public money and the public has a right to know what that money buys within the constraints only of national security.

The Army is also reaffirming, dramatically, its support of the competitive philosophy that underlies America's uniquely successful system of private enterprise.

The Army is doing so for selfish reasons — good business reasons, if you will. The Army is convinced that only through the broadest kind of competition can it attract the very best in brains and products at the lowest sound price. In return for that benefit, the Army hopes to be able to establish a permanent program that will offer you the information you must have to compete better and to produce more.

Competition then can be all encompassing, providing the broad base of suppliers we seek while ensuring the production of acceptable products at a price which is manifestly fair to both the buyer and the seller. It is our fervent hope that the new program we hope to institute during the coming year will go a long way toward the attainment of this type of competition, permitting us to build a better Army while concurrently strengthening our defense industrial base.

It is in the realization of this goal that we in the Army are soliciting your active participation and support.

Phase Out Continues at Mobile AMA

(Continued from page 9)

Quail, AGM–28 Hound Dog, hydraulic systems, General Electric, Allison and Pratt & Whitney turbofan–30 engines and selected electronic systems.

To Warner Robins AMA, Robins AFB, Ga.:

- Management and supply of approximately 8,000 materiel management coded items peculiar to: Air-to-air missiles (AIM/AGM), C–46, C-47, C–54, C–118, C–119, C–123, C–124, C–133, C–141, B–66, HU–16, B–57, utility series and helicopter aircraft, armament and guns, corrosion control function, B–20 program, maintenance evaluation program and procurement support for Eastern GEEIA headquarters region.
- Maintenance of heating equipment (FSC 4520) and compressors and pumps (FSC 4310/20).

To Wright-Patterson AFB, Ohio:

- Management of central point cataloging and standardization program and Air Force packaging and evalution program.

Committee of College Deans to Assist in Managing DOD Logistics Training Program

The Department of Defense has established a four-man committee consisting of business school deans at the University of Alabama, the University of Minnesota, Dartmouth College and the University of Miami, Fla., to assist in managing the Defense Logistics Management Training Program.

The committee will advise Paul R. Ignatius, Assistant Secretary of Defense (Installations and Logistics), on training policies and problem areas and on the extent to which Defense and Service logistics schools meet training needs.

Members of the committee are S. Paul Garner, Dean of the School of Commerce and Business Administration, University of Alabama; Paul V. Grambsch, Dean of the School of Business Administration, University of Minnesota; Karl A. Hill, Dean of the Amos Tuck School of Business Administration, Dartmouth College; and Clark E. Myers, Dean of the School of Business Administration, University of Miami.

Dr. Nathan Brodsky of Mr. Ignatius' office will serve as chairman of the advisory committee.

An intensive joint program was launched by the Department of Defense in 1963 to provide common training in logistics management for the Army, Navy, Air Force and Defense Supply Agency.

Studies of higher education for civilian business showed many problem areas similar to those encountered in training for Defense logistics management.

The selection of deans with responsibilities for managing business schools will provide the Department of Defense with professional assistance to improve further the quality of logistics management training.

Rawco Instruments, Inc., Small Business Success in Space Program

Scientific cooperation between a small Texas electronics business firm and a large aerospace corporation may have resulted in discovery of a method of detecting and measuring the electrostatic environment in rockets and missiles ascending through and beyond the earth's atmosphere.

Electrostatic discharges have been blamed for malfunctions which have occurred during the launch phase of various space vehicles. In support of a NASA requirement, the Astronautics Division of the LTV Aerospace Corporation called on engineers from Rawco Instruments, Inc., a 14-man small business in Fort Worth, Tex. to assist in the design and to fabricate electrostatic and transient sensors to detect static charges of low and high intensity.

Four of these sensors, two to measure static charge on the rocket's skin and two to detect electrical potentials created during separation of rocket stages, were installed on a new and more powerful Scout research rocket. The Scout was launched August 10 from NASA's Wallops Island, Va., facility. The flight was successful and the sensors sent back data, now being analyzed, via telemetry during initial phases of the launch.

LTV took the measurement problem to Rawco and asked it to build sensors which could be installed in the Scout's electrical system. These sensors weighed about a pound each and were only five inches long, but construction was a meticulous task.

It was not known what electrical range had to be measured, if indeed any existed, so the electrostatic sensors were designed to report voltages over a range of 10 to 30,000 volts. The transient sensors, which measured any electrical potentials during separation of the rocket stages, were designed to record anything from 50 to 50,000 volts. All were Field-Mill type (generating voltmeter) sensors modified for special application.

Close cooperation between LTV and Rawco resulted in speedy design and fabrication of three sets of the sensors. Two of each were installed in the second and third stages of the 72-foot Scout rocket and electrostatic readings were secured during the launch.

Navy Guide for Technical Development Plans Available

The Office of the Chief of Naval Material has announced that copies of the latest edition of the "Guide for the Preparation of Technical Development Plans (NAVMAT P–3910)" are available for purchase from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.

The new guide supersedes advanced copies of the "Handbook for the Preparation of Technical Development Plans" distributed in December 1964.

The purpose of the publication is to assist principal development activities within the Naval Material Support Establishment by providing guidelines for the preparation of technical development plans. The guide is organized into 14 sections which parallel the Technical Development Plan format required by existing Navy directives.

Navy RDT&E Management Guide Available to Industry

by

D. S. Taylor
Director of Industrial Management
U. S. Naval Propellant Plant

Are you involved in Research, Development, Test and Evaluation (RDT&E) contracts with the Navy? Would you like to get a broad overview of the DOD Programming System? Do you wade through stacks of documents on the Navy RDT&E process looking for an answer to a vital question–

If the answer to any of these questions is "yes," a new publication, "Department of the Navy RDT&E Management Guide," may help you.

Although the original purpose of the guide was to meet an internal Navy requirement, its application expands beyond. For this reason, it has been made available to industry through the Government Printing Office.

The need for such a guide was first highlighted in the recent Review of Management in the Department of the Navy. Its recommendations on RDT&E included the following statement:

> ". . . as soon as practicable the Chief of Naval Research, Chief of Naval Material, and Deputy Chief of Naval Operations (Development) will . . .prepare a Management Guide that will describe planning, budgeting, execution, and appraisal of the RDT&E process."

The official beginning of the guide was a memorandum issued by the Assistant Secretary of the Navy for Research and Development on June 4, 1963, to implement the recommendations of Review of Management.

The purpose of the guide, as stated by Dr. Robert N. Morse, Assistant Secretary of the Navy (R&D), is to:

> "(1) Facilitate orientation of military and civilian personnel newly assigned RDT&E responsibilities by providing a summary overview of Department of the Navy RDT&E management 'machinery.'
>
> "(2) Provide a handy source of general information concerning RDT&E organization and procedures and references to official sources for specific details."

The Assistant Secretary of the Navy (R&D) exercised overall supervision of the project which produced a preliminary edition of the RDT&E Guide published on July 1, 1964. Preparation of the guide was a consolidated effort of many contributors including personnel from the following offices: Deputy Chief of Naval Operations (Development), Chief of Naval Development, Deputy Chief of Naval Material (Development), Office of Naval Research, Bureau of Ships and Bureau of Naval Weapons. Several Naval Reserve officers who served their two-week active duty on the project augmented the available manpower and contributed the benefits of their Naval and professional experience.

Within Navy, reception of the preliminary edition exceeded expectations. Requests for copies were immediate and numerous. The task of "smoothing" the preliminary copy and preparing the formal edition was begun immediately by a group of Naval Reserve officers under the management of Bureau of Naval Weapons Training Unit WEPTU-664.

Volume I.

The guide is published in two volumes. Volume I provides an overview of RDT&E and describes procedures for planning, programming, budgeting, appraisal and procurement. It is an integrated account, to be read from cover to cover as a complete story. However, the comprehensive index is an excellent reference source for information on specific topics. The seven chapters of Volume I cover the following topics:

Chapter I—Organization for RDT&E.

A broad overview of organization for RDT&E is provided with emphasis on responsibilities of major officials and working relationships between them. Detailed information on the organization of activities involved in RDT&E management can be found in Appendix E.

Chapter II—Planning.

The Navy Planning System is briefly outlined and procedures and responsibilities in planning of RDT&E effort are covered in greater detail. The evolution of RDT&E plans is traced from their genesis in the interaction of scientific and technological possibilities, with long-range military capability needs, to their definitive expression through formal Project Definition Phase. Marine Corps planning for RDT&E is also covered.

Chapter III—Department of Defense Programming System.

The Department of Defense Programming System and its implementation in the Department of the Navy are covered. In addition to the mechanisms of the Five-Year-Force Structure and Financial Program (FYFS&FP) and Program Change Control System, theoretical aspects of the system are also discussed.

Chapter IV—Preparation and Justification of the Budget.

The 18-month process of the development, presentation and justification of the RDT&E budget, from the development of the Program Objectives to passage of the Appropriation Act by the Congress, is presented. The objectives and mechanisms of the budgetary process and responsibilities or organizations and officials in the process are covered.

Chapter V—Execution of the Budget.

The execution of the RDT&E program is described from the budgetary standpoint. Subjects covered include apportionment and allocation of funds, reprogramming, the operation of the Secretary of Defense Emergency Fund and audits and review.

Chapter VI—Appraisal of RDT&E Effort.

The execution of the RDT&E program is discussed from the viewpoint of the appraisal of on-going effort which provides the occasion for management action. Focus is on organization, procedures and practices at the suprabureau level. The theory of management by exception and the place of planning, reporting and appraisal in its implementation are discussed. The chapter also covers Office of the Director, Defense Research & Enginering continuing review of on-going projects and the physical evaluation of equipment and weapons systems by the operating forces.

Chapter VII—Procurement of RDT&E Effort.

The chapter deals with the process of arranging for the implementation of RDT&E effort, whether performed by in-house laboratory or under contract by a non-profit institution or private industry. RDT&E procurement policies and contracting procedures for each major category of RDT&E effort are discussed as well as the more technical aspects of contracting procedures and requirements.

Volume II.

Volume II is a collection of official information, brought together for reference. It consists of nine appendices on the following subjects:

Appendix A—Glossary.

The glossary is a collection of definitions of terms used in RDT&E management. Even though definitions were culled from official directives and manuals, few have been prescribed for general use. The source of each term is identified. A reference list of sources and other glossaries is provided.

Appendix B—The Navy Directives System.

The organization of the Navy directives system is explained along with information on available aids for identifying directives applicable to particular subjects.

Appendix C—Classification Systems.

Several classification systems employed in RDT&E management are presented. The relationship between programming and appropriation classification in the RDT&E area is explained and illustrated.

Appendix D—The Nature of RDT&E Effort.

The categories of RDT&E effort into Research, Exploratory Development, Advanced Development, Engineering Development and Operational Systems Development is explained and definitions of these categories are provided.

Appendix E—Organizations.

This appendix comprises approximately half of Volume II. It represents an attempt to provide relatively detailed information on all major organizations, except laboratories, which are involved in the management of Department of the Navy RDT&E effort. In addition to the organization of the elements of the Department of the Navy, the organization of the Office of the Director, Defense Research & Engineering, the Advanced Research Projects Agency, the Weapons Systems Evaluation Group, joint agencies and other Government agencies involved in RDT&E are covered. The chapter also includes information on major RDT&E boards and advisory groups and test organizations.

Appendix F—Laboratories.

Background information on the function of the Navy's in-house laboratories is provided along with briefs on each institution. These briefs include a statement of laboratory location and mission.

Apendix G—Policies.

Some major statements of policy applicable to management of the Department of the Navy RDT&E effort are provided. These include basic defense policies, basic RDT&E policies and policies on contracting for the guide.

Appendix H—Promoting Effectiveness and Economy.

Information on management concepts, techniques and programs currently in use by the Department of Defense and the Navy to improve the utilization of funds and effectiveness and economy of operations is provided. The appendix also provides information on obtaining advice and assistance for improving the cost effectiveness of operations.

Appendix I—Charts.

This section contains both charts collected from official Government sources and original charts developed for the guide.

The guide is designed to be a "living document"—constantly responding to changes in RDT&E management and structure and processes, and constantly improving in content and presentation. The Assistant Secretary of the Navy (R&D) continues to exercise direct and personal supervision of this complete and up-to-date information on Navy RDT&E.

The Department of the Navy RDT&E Management Guide (NAVSO P-2457) may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., 20402. Volume I and Volume II are now available at a purchase price of $.60 and $1.50 per copy, respectively.

INDUSTRY BRIEFS

Raytheon Company's field engineer Joseph J. Jelinek was cited by the Air Force's Air Defense Command for his contributions to the command's electron tube life improvement program which resulted in a cost avoidance of more than $25 million over a three-year period . . . "Small Business is Big Business and Good Business," according to McDonnell Aircraft Corporation. Of 4,460 suppliers, 79.4 per cent are small business firms.

Lockheed-California Company, under Army contract to determine the capability of a rigid-rotor aircraft to act as a flying weapons platform, has completed special aiming accuracy tests. Aiming accuracy was tested from hover to speeds of 150 mph and at ranges up to 10,000 feet . . . Rocketdyne topped by six per cent its established cost reduction goal during Fiscal Year 1965. The 1065 goal was increased by 56 per cent over the previous year.

During the recent Association of the U. S. Army Annual Meeting in Washington, D. C., Ling-Temco-Vought published a daily tabloid, *Salute*, to keep attendees current on meeting activities . . . The Navy commended Vitro Laboratories' Willie W. Murray and Travis L. Curry for their work on the Polaris program.

Sylvania Electronic Systems has reported a saving of $0.6 million during the first half of 1965 in support of the Defense Department's cost reduction program . . . Seven Air Force officers just back from combat in Vietnam visited **McDonnell Aircraft Corporation** for an industrial briefing on their experiences with the company-produced F-4C . . . The first major supplier to receive General Electric Company's Zero Defects citation was **TRW Valve Division.**

Goodyear Aerospace Corporation is working on the development of an operational float system to eliminate the rock 'n roll from ocean-based aircraft. The concept will be tested on the Navy's P–5A seaplane . . . Fairgoers at the Los Angeles County Fair's "Science USA" were fascinated by the General Dynamics Corporation-produced Redeye. They had the opportunity to aim and fire a simulated missile system . . . Thomas V. Jones, Chairman and President of Northrop Corporation, reported a savings of more than $19 million in Northrop's support of the Defense Department's cost reduction program.

Martin Company is modifying a number of B–57 twin-jet bombers for the Air Force. The B and C models are being modified to a tactical configuration . . . The completion of over five years work was marked by Westinghouse Electric Corporation's Defense and Space Center when the SPG–59 radar and weapon direction equipment was delivered to the Navy . . . Thiokol Chemical Corporation's Elkton Division conducted its 30,000th rocket firing. The test was of a rocket motor designed to ride atop the Apollo spacecraft in the early part of its trip to the moon.

One of the sidelights of Deputy Assistant Secretary of Defense George E. Fouch's visit to Sperry Gyroscope Company was the witnessing of employees signing pledge cards at the start of the company's Zero Defects program . . . Douglas Aircraft Company, Inc., is equipping a number of C–135 aircraft to provide communications with the Apollo space capsule. The aircraft will also provide broad, general test range support to defense programs . . . "The Research Explosion," by Assistant Secretary of the Air Force for Research and Development Alexander H. Flax was the lead article in the last issue of Cornell Aeronautical Laboratory's magazine, *Perspective*.

The Bunker-Ramo Corporation received an "exceptional" rating from the Air Force's Los Angeles Contract Management District for its small business subcontracting procurement program. The firm issued purchase orders totaling $7 million in one year to firms qualifying as small business. . . . The Navy's 8,000th man to qualify as a helicopter pilot was Marine Corps First Lieutenant G. W. Glaser in a Sikorsky Aircraft UH–24 . . . Forty students and faculty members of the Brazilian National War College toured the Newport News Shipbuilding and Dry Dock Company. They represented a party of 80 men who were on a two-week tour of the United States as part of their War College training . . . Douglas Aircraft Company's Missile and Space Systems Division plans to build a prototype device for detection and measurement of several spacecraft cabin atmosphere contaminants. The measurement probe will be designed to detect such cabin contaminants as ammonia, carbon dioxide and other gases originating from man and spacecraft equipment.

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DOD Instruction 7720.10, "Contractor-Originated Value Engineering Change Proposals — Reporting Requirements," Sept. 16, 1965. Provides uniform procedures and formats for reporting Value Engineering Change Proposals submitted by contractors to the Departments of the Army, Navy and Air Force and the Defense Supply Agency as part of the DOD Value Engineering Program.

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Publications Distribution Branch
Office of the Secretary of Defense
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(Continued on page 26)

A NATO Common Defense Market

(Continued from page 6)

when we speak of a common market in practical living form, we speak of the organizations that we know of as common markets today which never quite achieve, but at least strive to increase, the flow of technology, capital, labor and products across borders with the minimum of interference for the specific purpose of improving the product returned for the effort expended. The goal is relatively simple. It is the process that is complex. Attempts are being made in almost every regional area of the world to group the buying powers of an entire region in order to bring the economy of scale to the production planning for the region.

Common markets in their purest sense are designed to support the most efficient producers and not to support all of the independently subsidized producers in the separate states. It will not be surprising, therefore, to see some allied industries barely maintaining themselves on a highly subsidized basis opposed to the idea of a common defense market. I do not think these people are to be criticized for we too from time to time, as this matter develops, will have to consider carefully the necessary position of our own industries.

Also, it is my opinion, derived through extensive discussions with U. S. manufacturers, that on balance the highly competitive approach that has been taken here in the U. S., particularly as a result of Secretary McNamara's cost reduction programs, places U. S. industries in fit condition for competition throughout the world. The large buying by our allies in the U. S. of defense production has proved this point. For in spite of what one may hear from time to time, this buying has been the result—not of supersalesmen—but of an increasing number of super-buyers throughout the world. Governments have increasingly insisted on purchasing nonproductive defense materials at the lowest possible cost and, thereby, saving literally billions of dollars for their taxpayers. Therefore, in this respect we are already in a sort of a common defense market because most of the major governments of NATO have already accepted the principle of buying selectively on the basis of technology and cost effectiveness in production and use.

We will undoubtedly be moving forward in the future in the development of international relationships between ourselves and certainly those nations which have placed such extensive dependence on American industry to maintain and develop a system based on these principles:

- The development of an efficient, lowest possible cost, highest possible quality defense industry.
- Minimum barriers to the free flow of capital, technology skills and products for the defense industries within the NATO alliance.
- Development of an effective specialization with the result that the defense producers in each country apply themselves to those areas of fabrication in which they have the greatest capable efficiency.
- Exploitation of the "economy of scale"—first on a selective basis and then in broader ways.
- Development of a network of industry-to-industry relationships of technical associations.

I believe the job of the Government is to try to maintain the proper policy environment for such competition by industry; to move ahead in specific selective projects with industry in the next few years to test out the operating principles.

Joint Production and Development Activities.

Having discussed the nature of a common market we can now turn to the even more practical world of dealing with specific movements towards joint arms production and other activities which will have the effect of creating a common defense market for NATO.

The record of the U. S. is tremendous in this regard. I doubt that any other nation in history has ever done more to stimulate international production and development projects. There has been more said about our exports in the past four years than has been said about those other projects and, therefore, I think it is essential to review with everybody the base from which the U. S. initiates any movement towards a NATO common market. Let me review some of the major programs that have been prompted, coddled, stimulated and supported with hundreds of millions of dollars of technology and even large amounts of hard cash by the U. S. in recent years.

First, there are a series of production programs for which the U. S. provided over $200 million in research and development technology to bring hundreds of European companies into the production of modern weapons systems.

- There was the F–104 production program, valued at $1,500 million, into which the U. S. contributed $140 million in cash.
- There was the NATO Hawk production program, valued at $660 million, into which the U. S. contributed $134 million in cash.
- There was the NATO Sidewinder production program, valued at about $40 million, into which the U. S. contributed $9 million in cash.
- There was the NATO Bullpup production program, valued at $30 million, into which the U. S. contributed $8 million in cash.
- There was the NATO Mark 44 Torpedo production program, valued at about $20 million, into which the U. S. contributed $2 million in cash.

And, of course, the U. S. programs do not end there. In the last four years there have been numerous programs of research and development on a bilateral and multilateral basis with our allies. Over $132 million was expended by the U. S. directly with its allies during these last four years on allied research programs of the following types:

- Army—Anti-tank missiles, mines, mortars, and fuses; surface-to-air missiles, radar defense against chemical agents, personnel and cargo carriers and rocket-assisted ammunition.
- Navy—Maritime patrol aircraft, radar jammers, small submarines, surface-to-surface missiles, small aircraft, oceanography, anti-submarine warfare rocket systems and sonar equipment.
- Air Force—Air-to-air and air-to-ground missiles, supersonic turbojet engines, lightweight strike aircraft, lift-thrust engines, line scan reconnaissance and airborne electronics.
- Basic research areas of the biosciences, chemical sciences, electronics, geophysics and propulsion.
- Aircraft such as the P–1127 vertical short take-off and landing aircraft.

Through cooperative research and development projects in the most recent past, work has begun on the main battle tank for the future, a heavy equipment transporter, plasma research, inertial navigation, beryllium aircraft engines, lightweight V/STOL fighter and associated engines, lift-thrust engines and the joint testing and evaluation of a wide range of aircraft.

It is hard to estimate the amount of technology flowing to Europe in these projects over and above the amount of actual cash going into the allied development work. It is even harder to estimate the hundreds of millions of dollars of technology that have been going to our allies under the Data Exchange Program. Over 500 agreements on data exchange with most of the information going one way, from the U. S. to our allies, have been active in the last four years.

- On the ground — Field radio communications, rifle and hand grenades, mortar and artillery shells, armored vehicles, protection against chemical agents, night vision devices, anti-tank missiles, air defense missiles, reconnaissance drones, dehydration and irradiation of food, armament for helicopters, optical fire control devices, boosted rocket artillery and multifuel engines.
- On the sea—Sonar and radar, communications navigation, countermeasures, tactical missiles, mines and torpedoes, tactical data systems, ship machinery, optics, hydrodynamics, ship and aircraft construction and oceanography.
- In the air—Aircraft structure, aircraft engines, range instrumentation, electronic componentry, geophysics, airborne computers, pressure

suit design, celestial tracking, tactical missiles, aerial photography, vertical take-off and landing, ejection seats, airborne navigation, aircraft arresting devices and three-dimensional radar.

And some people say it hasn't been a two-way street.

Looking to the Future.

This brings us up to the present and the need to consider the future nature of actions which will be indicative of a "movement towards what in effect would be a NATO common market for defense production." First, the question of procurement policy—some nations have complained about the action of the U. S. to place a 50 per cent price differential requirement on the consideration of purchases abroad. This has been somewhat amusing to me because in my own personal 13 years of experience with NATO supply activities almost every European nation has applied a rule of thumb such as this at some time in the past when its own balance of payments situation required it—some of them continue to do it today and, not only apply it as a rule of thumb, but actually force their military services to pay as much as a 25 per cent tariff out of their current budget on items procured abroad.

Our first consideration in thinking of futher overseas procurement policy has been in direct relation with our own export program and a self-interest recognition, on our own part, that some of the obstacles to a two-way street must be removed where large purchases from the U. S. are being undertaken by our allies. Therefore, recently in the case of Great Britain, we indicated that we could not guarantee purchases but we would be willing in selected cases to allow British industry to compete with American industry on equal terms. This, in effect, meant on our part that not only would we remove the 50 per cent rule from those items selected, but that we would also make application to the Treasury Department to remove any tariffs on items imported for the use of our own military forces.

Taking such action on a selective basis will begin to establish the environment in which a common market type industry can seek out the best ways and means of industrial cooperation in the armaments field. Whether or not this ever ends up in the removal of all barriers to the free movement of capital, materials and industry within the NATO market will depend on many considerations. Just as in the European Economic Community the entire procedure was scheduled to take over 12-15 years and, even then did not cover the field of defense production, so most of these things must be considered in any application of a common market principle to defense.

We contemplate selective projects over the next few years in three major areas:

- First, we are already developing plans for some new NATO cooperative production proposals for the 1965-1970 time frame similar to those that I mentioned before on the F–104G, the Hawk, Sidewinder, etc. We are considering systems that meet a wide range of needs throughout Europe, such as the Redeye, the Mark 12 IFF equipment, Sparrow air defense system for the F–104, tanks, and even aircraft. It would be our objective to implement such cooperative production programs with an increasing degree of competition between the using nations and, thereby, gradually develop the concepts of free trade within these projects.

- Secondly, we are looking for expansion of cooperation in research, development and technology exchange which will take off from the massive base of U. S. and allied exchanges in technology that exist today in broad general fields and apply it to the attainment of specific armaments designs for practical application to the armed forces of NATO in the post-1970 time frame.

- By far the most interesting area has been a practical examination of component and subsystems buying which has been going on in connection with the F–4 Phantom production for the British government. We have been pressing this approach because, when we examined only 17 of our leading export items, we found that the economical effect of producing these 17 items was nothing like one would expect in dealing with only 17 plus prime manufacturers. We found that over 40,000 suppliers in all 50 states of the Union in over 1,700 cities and towns were involved in the production of these 17 systems. This had been the result of essentially common market competition between the states of the United States where barriers to such competition had been completely eliminated. It was clear that, if such barriers had existed, production would have pretty well been confined to five or six major states.

Thus, we concluded that the armaments industry was not really as narrow as some suspected. To the contrary there was room for many suppliers to participate in a single weapon system program. We also concluded, however, that this type of competition was so complex that it was not the kind of procurement planning that could be done solely by Government. It would require the development of a new breed of engineer-diplomat to work on the thousands of details necessary—for the qualification of foreign companies and the exercise of industrial competition between these foreign and American companies.

As a test, the McDonnell Aircraft Corporation has worked out these thousands of details on almost 200 components or subsystems of the F-4 Phantom and has qualified, in cooperation with British government and industry, over 100 British companies to compete with American companies on components and subsystems for the F-4 aircraft being produced for Great Britain. Depending on how this competition comes out, there is a chance that well over $150 million of business will go to these British companies and will, thereby, save that much foreign exchange for the British government.

Coming to the conclusion, I would like to translate all of these generalities into some of my own personal predictions for the future—so that we might all understand the context in which any common defense market consideration will proceed in the next 10 years.

- First, in the next 10 years I expect that our allies may purchase a minimum of $10 to $15 billion of their requirements from the U. S. by sheer virtue of the fact that most of these items will be a minimum of 30 to 40 per cent cheaper and will be highly competitive from a technical point of view—reflecting the continuing large research and development expenditures for U. S. military products.

- Secondly, I expect in the next 10 years that some $5-$10 billion of combined U. S. and allied requirements may be handled through international production and development programs—the largest amount of common production and development that has ever occurred in the history of the world.

- In the same 10 years an additional $50-$60 billion will be spent by our allies in their own countries with their own industry because it will be cheaper to do so than to warrant transportation, etc., because it will reflect continuing protection of certain defense industries.

- That proceeding in these practical ways to resolve our problems we and our allies will place in position for the 1975-85 period a new breed of industries, engineer-diplomats, capital and labor practiced in the tasks of using the common market approach to bring the economy of scale to an increasing number of production programs.

- Finally, in the period of the next 10-20 years we will see a harmonization in allied military requirements and products to an extent not ever seen before in the field of vehicles, armor, aircraft, missiles and electronics.

I trust that I have been able to give you something to think about in your own company planning and that you will find many more ways and means than I have described to participate in the scheme of things to come.

New Analysis System of Used Aircraft Oil Saves Lives, Dollars

Navy technicians at the Pensacola Naval Air Station Overhaul and Repair Laboratory have developed a new and reliable method for detecting potential aircraft engine trouble by analysis of an aircraft's used oil.

The new system, which is now under development throughout the Services, is saving the lives of pilots, passengers and millions of dollars worth of equipment.

Some have compared the system to the blood analyses used by physicians because it gives an indication of what is happening inside without actually observing the interior of the mechanism.

The process is based on the fact that engine parts are constructed of a variety of materials and that friction wear on the moving parts of an engine produce metal particles that are carried away by lubricating oil and remain in permanent suspension as a collodial solution.

Under normal operating conditions, the metal contaminants exist only in trace amounts so small that it has been nearly impossible to determine either concentration or identification by traditional wet chemical methods.

The current availability of sophisticated optical and electronic instruments, however, has made possible the achievement of a rapid and exact determination of oil contaminants in concentrations of fractions of parts per million. Coupled with this instrumental development has been the more important one of correlating the test results obtained with wear rates of lubricated metal components. By studying the oil's content, analysts are able to identify those parts which are wearing out faster than normal.

Although most planes are equipped with emergency trouble detectors, such as oil screens and chip detector devices which automatically light a warning signal in the cockpit, only oil analysis can uncover trouble before it becomes an emergency and a threat to the safety of a plane in flight.

The tests are performed by taking periodic samples of used oil from aircraft engines and sending them to laboratory facilities equipped with spectrometers designed to indicate what types of metal are present and in what amounts.

If a higher than normal concentration of any metal is found, the command which submitted the sample is notified and trouble shooting measures are initiated on the aircraft to determine the cause. After maintenance has been completed a second sample is submitted to see if excess metal is still present. If there is, a major engine overhaul is recommended.

The system produces substantial economic advantages because parts can be replaced when needed, instead of waiting for complete engine overhauls. Thus, fewer overhauls are necessary.

In the meantime, however, there remain certain obstacles which must be overcome. Major among them is the limited number of spectro-chemical laboratory facilities available to the Military Services. With this factor particularly in mind, all three Services are currently evaluating various instruments suitable for field use which are relatively portable and which do not require the rigid environmental control necessary for the massive instruments used at the basic laboratories.

Still further in the future is the development of a predicting instrument located in the aircraft itself. This would be an in-flight instrument coupled with a computer which would be capable of monitoring increase in rate of metal concentration and of relating this information to remaining safe flight time.

Whatever the type of field instrument which eventually emerges, it will still possess only the capacity of measuring the rate of wear of lubricated parts. A ripe field for future research will be the development of an instrument which will detect impending catastrophic failures caused by abnormalities not related to wear. These include fatigue failures which, to date, have continued to defy scientific solution.

Army Testing Foam Insulated Containers

The feasibility of using polyurethane foam and aluminum foil to help control the humidity in large metal shipping containers is being investigated by the U.S. Army Materiel Command Engineer Research and Development Laboratories, Fort Belvoir, Va.

Tests and evaluation of the foam and foil as a barrier for moisture-vapor proofing are being made on the Type 2 Conex Container, which is a 6' by 8' container made of corrugated steel and weighing approximately 1,500 pounds.

Controlled Humidity Conex Containers now being used have welded steel liners and sealed double doors to obtain a moisture-vapor proof seal. A free-breathing tube containing desiccant controls the relative humidity within the container. Extremes of temperature cause extremes of thermal expansion and contraction in steel lined containers. The use of polyurethane foam and foil as a liner should provide better control of temperature extremes with more desirable thermal conditions and less moisture load on the desiccant.

Testing of the conversion kit and converted container is being conducted at Fort Lee, Va., and is expected to be completed in the summer of 1966.

Hill AF Base Gets National Glass Bank

A national glass "bank" containing more than 2,500 pieces of optical-quality glass has been transferred to Hill Air Force Base, Utah, from Olmsted Air Force Base, Pa.

The Air Force Logistics Command (AFLC) directed movement of the collection of glass to the Utah installation and designated Ogden Air Materiel Area (AMA) as custodian of the bank. Ogden AMA will be responsible for storing the glass and controlling its issue.

Glass items in the collection are unfinished blanks in various sizes which can be manufactured into lenses or mirrors by grinding and polishing. The pieces range in size from 5.2 inches to 28.75 inches in diameter and from ⅝ inch to 6 inches in thickness. The complete collection weighs more than 30,000 pounds and occupies 4,160 cubic feet of storage space.

The glass bank began as a collection of German optical-quality glass for which the National Bureau of Standards was given the responsibility for control after World War II. NBS catalogued the glass and, to make the collection more complete, contracted with an American glass manufacturer to supply blanks that would fill the gaps in the German glass sizes and types.

In 1962 responsibility for maintaining the glass bank was transferred from the National Bureau of Standards to the Air Force Logistics Command.

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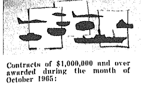
Government research and development reports are available to science and industry at price indicated from:

Clearinghouse for Federal and Scientific Information
Department of Commerce
Springfield, Va. 22151

Authorized DOD contractors and grantees may obtain these documents without charge from:

Defense Documentation Center
Cameron Station
Alexandria, Va. 22314



DEFENSE PROCUREMENT

Contracts of $1,000,000 and over awarded during the month of October 1965:

DEFENSE SUPPLY AGENCY

1—B. F. Goodrich Co., Akron, Ohio. $1,071,500. 1600 collapsible fabric fuel drums. Defense General Supply Center, Richmond, Va.

6—Kaiser Steel Corp., Oakland, Calif. $8,286,925. 4,488,133 metal fence posts. Defense Construction Supply Center, Columbus, Ohio.

—Continental Oil Co., Houston, Tex., $1,063,700. 290,000 barrels of diesel marine fuel oil. Lake Charles, La. Defense Fuel Supply Center, Alexandria, Va.

7—Southern Athletic Co., Knoxville, Tenn. $2,208,500. 867,250 coated nylon twill ponchos. Defense Personnel Support Center, Philadelphia.

8—The Defense Fuel Supply Center, Alexandria, Va., has issued the following contracts for fuel oil and gasoline for use at military installations in the eastern United States: Gulf Oil Corp., Houston, Tex. $2,956,706; Socony Mobil Oil Co., New York City, $2,186,710; Humble Oil & Refining Co., Houston, Tex. $1,076,014; and Hess Oil & Chemical Corp., Perth Amboy, N. J. $1,550,121.

11—United Fruit & Food Corp., Boston. $1,109,088. 92,124 pounds of raw dehydrated shrimp. Defense Personnel Support Center, Philadelphia.

—Northwestern Steel & Wire Co., Sterling, Ill. $1,355,951. 107,708 rolls of concertina barbed wire (50 feet per coil). Defense Construction Supply Center, Columbus, Ohio.

12—Oscar Mayer & Co., Madison, Wis. $1,408,708. 2,050,939 pounds of canned frankfurters. Defense Personnel Support Center, Subsistence Regional Headquarters, Chicago.

18—Allen Overall Co., Monroe, N. C., $1,047,151. 314,460 men's cotton poplin coats. Defense Personnel Support Center, Philadelphia.

—Joseph Pickard's Sons Co., Philadelphia. $9,109,763. 88,880 bundles of steel landing mats. Defense Construction Supply Center, Columbus, Ohio.

—Syro Steel Co., Girard, Ohio. $8,142,226. 34,664 bundles of landing mats. Defense Construction Supply Center, Columbus, Ohio.

19—Eastman Kodak Co., Rochester, N.Y. $1,385,088. 16,000 rolls of aerial photographic film. Defense General Supply Center, Richmond, Va.

20—Monsanto Chemical Co., St. Louis. $1,946,600. 850,000 gallons of herbicide. Monsanto, Ill. Defense General Supply Center, Richmond, Va.

21—Oscar Mayer & Co., Madison, Wis. $1,387,928. 1,254,624 cans of pork sausage links. Defense Personnel Support Center, Philadelphia.

—Bryan Bros. Packing Co., West Point, Miss. $1,453,908. 1,464,860 cans of pork sausage links. Defense Personnel Support Center, Philadelphia.

22—Diamond Fruit Growers, Hood River, Ore. $1,008,886. 145,000 cases of canned pears. Defense Personnel Support Center, Philadelphia.

—Shell Oil Co., New York City, $2,763,000. 1,500,000 barrels of fuel oil. Defense Fuel Supply Center, Alexandria, Va.

26—Fred Whitaker Co., Philadelphia. $1,593,256. 1,240,000 pounds of scoured and carbonized wool. Defense Personnel Support Center, Philadelphia.

—North American Packing Corp., Boston. $1,326,652. 276,886 six-pound cans of corned beef. Defense Personnel Support Center, Philadelphia.

—International Shoe Co., St. Louis, $1,648,828. 164,866 pairs of men's black leather oxford dress shoes. Defense Personnel Support Center, Philadelphia.

—J. F. McElwain Co., Nashua, N.H. $1,562,500. 250,000 pairs of men's black leather oxford dress shoes. Defense Personnel Support Center, Philadelphia.

—Genesco, Inc., Nashville, Tenn. $1,263,200. 200,000 pairs of men's black leather oxford dress shoes. Defense Personnel Support Center, Philadelphia.

—Council Mfg. Corp., Fort Smith, Ark. $1,169,854. 215 Prefabricated panel-type refrigerators. Defense General Supply Center, Richmond, Va.

27—United States Steel Corp., Cincinnati, Ohio. $1,614,045. 168,500 spools of barbed wire. Joliet, Ill. Defense Construction Supply Center, Columbus, Ohio.

—Joseph Pickard's Sons Co., Philadelphia. $8,995,542. 38,886 bundles of steel landing mats. Defense Construction Supply Center, Columbus, Ohio.

—Syro Steel Co., Girard, Ohio. $8,142,226. 34,664 bundles of steel landing mats. Defense Construction Supply Center, Columbus, Ohio.

28—Golden Eagle Refining Co., Los Angeles. $1,016,520. 516,000 barrels of No. 6 fuel oil. Defense Fuel Supply Center, Alexandria, Va.

—Anaconda Wire & Cable Co., New York City. $1,010,718. 278,000 feet of telephone cable. Defense Industrial Supply Center, Philadelphia.

—Thermo King Corp., Minneapolis. $1,698,000. 1,000 refrigeration units. Defense General Supply Center, Richmond, Va.

29—Standard Oil Company of California, San Francisco. $2,031,600. 1,050,000 barrels of No. 6 fuel oil, Defense Fuel Supply Center, Alexandria, Va.

—Union Oil Company of California, Los Angeles. $1,158,000. 600,000 barrels of No. 6 fuel oil. Defense Fuel Supply Center, Alexandria, Va.

ARMY

1—Eugene Luhr & Co., and Massman Construction Co., Columbus, Ill. $1,045,000. Construction work on the Ohio and Missouri Rivers Navigation Project. Engineer District, St. Louis.

4—William McWilliams Industries, New Orleans. $1,754,592. Work on the Atchafalaya Flood Control Project. Engineer District, New Orleans.

6—Allis-Chalmers Mfg. Co., York, Pa. $8,601,845. Manufacture and delivery of five hydraulic turbines for the Ozark Lock and Dam powerhouse, Ozark, Ark. York. Engineer District, Little Rock, Ark.

—Cutler-Hammer, Inc., Deer Park, N.Y. $1,608,150. One prototype and four service test models of a Search and Intercept Assembly with technical report and ancillary items. Army Electronics Command (AMC), Fort Monmouth, N.J.

7—Ford Motor Co., Dearborn, Mich. $1,444,000. ¼-ton utility trucks. Highland Park, Mich. Army Mobility Command (AMC), Warren, Mich.

—Collins Radio Co., Dallas, Tex. $1,200,000. Air-to-ground communication sets (AN/ARC-54). Army Electronics Command (AMC), Fort Monmouth, N.J.

8—Hughes Aircraft Co., Culver City, Calif. $4,178,655. Research on use of TOW (Tube launched Optically Tracked Wire guided missile) weapon on helicopters. Tucson, Ariz. and Culver City. Los Angeles Procurement District, Pasadena, Calif.

—Chamberlain Corp., Scranton, Pa. $3,558,250. 175mm projectiles. Scranton. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

12—National Cash Register Co., Dayton, Ohio. $1,141,646. Classified electronics equipment. Electronics Command (AMC), Fort Monmouth, N.J.

13—Harvey Aluminum Sales, Torrance, Calif. $24,802,693. Ammunition. Milan, Tenn. Ammunition Procurement and Supply Agency, (AMC) Joliet, Ill.

—Lasker-Goldman Corp., New York City. $15,774,215. Construction of additional barracks and modernization of existing facilities at Washington Hall, West Point. New York Engineer District, New York City.

—Remington Arms Co., Bridgeport, Conn. $28,470,117. Ordnance items. Independence, Mo. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—Thiokol Chemical Corp., Bristol, Pa. $1,815,410. Ammunition. Marshall, Tex. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—Holston Defense Corp., Kingsport, Tenn. $17,960,105. Production of various types of propellants and explosives. Kingsport. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

14—A. O. Smith Corp., Milwaukee, Wis. $7,202,782. Acquisition or fabrication of equipment for production of ordnance items. Waco, Tex. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—Peter Kiewit Sons' Co., Vancouver, Wash. $4,950,711. Excavation and grading work on John Day Lock and Dam Project. The Dalles, Ore. Engineer District, Walla Walla, Wash.

—Decitron Electronics Corp., Brooklyn, N.Y. $2,494,800. Radio sets (AN/GRC-19). Army Electronics Command (AMC), Philadelphia, Pa.

—Raytheon Co., Lexington, Mass. $1,432,228. Ordnance items. Bristol, Tenn. Ammunition Procurement and Supply Agency, (AMC), Joliet, Ill.

15—Quiller Construction Co., Los Angeles. $2,920,000. Construction of an enlisted mens barracks complex at Fort Irwin, Calif. Engineer District, Los Angeles.

—Hupp Corp., Canton, Ohio. $4,407,811. Industrial type engines. Army Mobility Equipment Center (AMC), St. Louis.

—Chrysler Corp., Highland Park, Mich. $5,251,829. Combat engineer vehicles and repair parts. Center Line, Mich.; Eynon, Pa.; and Dayton, Ohio. Army Weapons Command (AMC), Rock Island, Ill.

—Bell Helicopter Co., Fort Worth, Tex. $4,946,224. Basic instrument helicopter trainers. Army Aviation Command (AMC), St. Louis.

18—RCA, Moorestown, N.J. $1,895,337. Continued research and development on a component verification program for the SAM-D (Surface to Air Missile-Development). Army Missile Command, Huntsville, Ala.

—Great Lakes Dredge and Dock Co., Cleveland, Ohio. $3,244,500. Work on the Conneaut Harbor Project, Conneaut, Ohio. Engineer District, Buffalo, N.Y.

19—Ashbach Construction Co., St. Paul, Minn. $4,800,186. Work on the St. Paul and South St. Paul Local Flood Protection Project. Engineer District, St. Paul, Minn.

—Hercules Powder Co., Wilmington, Del. $16,212,,624. Reactivation of the Sunflower Army Ammunition Plant, Lawrence, Kan. and for production of propellant powder for 2.75 inch rockets. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—R. G. LeTourneau, Longview, Tex. $1,192,646. Ammunition components. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

20—Maremont Corp., Saco, Maine. $1,482,148. M60 machine guns with bipod assemblies. Saco. Army Weapons Command (AMC), Rock Island, Ill.

21—AVCO Corp., Stratford, Conn. $11,559,200. Design, development, fabrication and test of gas turbine engines. Army Tank Automotive Center (AMC), Warren, Mich.

—Varian Associates, Palo Alto, Calif. $1,059,845. Klystron tubes for the HAWK missile system. Army Missile Command (AMC), Huntsville, Ala.

22—Hazen & Clark, Inc., Spokane, Wash. $1,584,100. Lower Monumental Lock and Dam Project, Pasco, Wash. Engineer District, Seattle, Wash.

—Martin-Marietta, Baltimore. $2,261,340. Parts and assembly of mine field launching skids with demolition charges. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.

—Weatherhead Co., Cleveland, Ohio. $1,011,082. Ammunition components. Amunition

Procurement & Supply Agency (AMC), Joliet, Ill.

25—**Hughes Aircraft Co.**, Fullerton, Calif. $1,249,287. Research and development on SAM-D (Surface to Air Missile Development) project. Los Angeles Procurement District, Pasadena, Calif.

26—**International Mapping Corp.**, Los Angeles, $1,248,000. Work on horizontal control system used to compile topographic maps. Army Map Service, Washington, D.C.

—**Lockheed Electronics Co.**, Clark, N.J. $1,658,970. Research and development services on range instrumentation equipment. White Sands Missile Range, N.M.

—**Daifield Industries**, Carrolton, Tex. $2,072,564. Bomb dispensers. Ammunition Procurement and Supply Agency, Joliet, Ill.

—**Philco Corp.**, Willow Grove, Pa. $1,897,306. Nine central office telephone switchboard, including training centers. Army Electronics Command, Philadelphia.

—**Weatherhead Co.**, Cleveland, Ohio. $2,929,290. Ordnance items. Ammunition Procurement and Supply Agency, Joliet, Ill.

27—**Remington Arms Co.**, Bridgeport, Conn. $1,727,211. 22 caliber cartridges. Frankford Arsenal, Philadelphia.

—**Magnavox Co.**, Fort Wayne, Ind. $2,971,889. Vehicular radio sets. Army Electronics Command, Philadelphia.

—**Kennedy Van Saum Corp.**, Danville, Pa. $1,734,018. 105mm projectiles. Danville. Ammunition Procurement and Supply Agency, Joliet, Ill.

—**Flare Northern Division of Atlantic Research Corp.**, West Hanover, Mass. $1,247,331. Ordnance items. Ammunition Procurement and Supply Agency, Joliet, Ill.

—**Amron Corp.**, Waukesha, Wis. $6,161,902. 20mm brass cartridge cases. Frankford Arsenal, Philadelphia.

28—**Sperry Rand Corp.**, Salt Lake City, Utah. $1,254,914. Electronic assemblies for the SERGEANT missile Army Missile Command, Huntsville, Ala.

—**Federal Laboratories, Inc.**, Saltsburg, Pa. $1,021,746. Chemicals. Saltsburg. Edgewood Arsenal, Md.

—**Galion Anco, Inc.**, Galion, Ohio. $1,052,038. Ordnance items. Frankford Arsenal, Philadelphia.

29—**Chamberlain Corp.**, Scranton, Pa. $4,540,814. 175mm projectiles. Scranton. Ammunition Procurement and Supply Agency, Joliet, Ill.

—**Rohn and Haas Co.**, Philadelphia. $2,900,000. Continuation of research and developments of solid and hybrid rocket propellants and propulsion. Redstone Arsenal, Ala. Army Missile Command, Huntsville, Ala.

—**Continental Motors Corp.**, Muskegon, Mich. $12,665,670. Multi-fuel engines for 5-ton trucks. Army Mobility Command, Warren, Mich.

—**FMC Corp.**, San Jose, Calif. $18,774,564. $10,525,614. Cargo, mortar, personnel and armored personnel carriers. Charleston, W. Va. Army Tank Automotive Center, Warren, Mich.

—**Finchbaugh Products, Inc.**, Red Lion, Pa. $1,380,488. 90mm target practice tracer shells. Ammunition Procurement and Supply Agency, Joliet, Ill.

—**Kupp Corp.**, Canton, Ohio. $5,863,536. Two and four cylinder, gasoline driven engines. Army Mobility Equipment Center, St. Louis.

—**Kaiser Jeep Corp.**, Toledo, Ohio. $1,317,643. ¼-ton utility trucks. Army Tank Automotive Center, Warren, Mich.

—**General Dynamics Corp.**, Pomona, Calif. $41,071,861. FY 66 procurement of REDEYE. Los Angeles Procurement District, Pasadena, Calif.

—**Ashbach Construction Co.**, St. Paul, Minn. $1,342,736. Work on Buffalo Bayou Project. Houston, Tex. Engineer District, Galveston, Tex.

—**Akers and Akers Contractors**, Dana, Ky. $1,040,148. Construction of Millard High School. Near Pikeville, Ky. Engineer District, Huntington, W. Va.

—**General Motors**, Indianapolis. $3,753,540. Transmissions for the Main Battle Tank. Army Tank Automotive Center, Warren, Mich.

—**Astrodata, Inc.**, Anaheim, Calif. $1,119,740. Advanced range testing, report and control. White Sands Missile Range, N.M.

—**Kennedy Van Saum Corp.**, Danville, Pa. $1,661,262. 105mm tracer projectiles. Danville. Ammunition Procurement and Supply Agency, Joliet, Ill.

—**Kaiser Jeep Corp.**, Toledo, Ohio. $58,823,287. 5-ton trucks. South Bend, Ind. Army Mobility Command, Warren, Mich.

NAVY

1—**Grumman Aircraft**, Bethpage, N.Y. $11,442,600. Long lead time effort to support FY 66 procurement of A6A weapons systems. Bureau of Naval Weapons.

—**Westinghouse Electric**, Baltimore. $31,620,743. Airborne radar sets. Bureau of Naval Weapons.

—**United Aircraft**, E. Hartford, Conn. $5,059,548. TF33 engines for the Air Force. Bureau of Naval Weapons.

4—**Elliott Co.**, Washington, D.C. $1,207,918. Two steam booster compressor plants for aircraft catapults, related technical data and services and installation of plants on an aircraft carrier. Jeannette, Pa. Bureau of Ships.

—**Interstate Electronics Corp.**, Anaheim, Calif. $1,859,675. POLARIS test instrumentation equipment. Special Projects Office.

—**General Electric**, Santa Barbara, Calif. $3,403,450. Development and implementation of a management system for the evaluation of material readiness of the Fleet Ballistic Missile Submarine Force. Special Projects Office.

5—**Columbia University**, New York City. $2,923,000. Continuation of research in underwater sound and related subjects to improve submarine detection. Dobbs Ferry, N.Y. Office of Naval Research.

6—**General Dynamics**, San Diego, Calif. $1,221,400. Continuation of research in ocean data processing. San Diego and Point Mugu, Calif., south of Puerto Rico and off the Straits of Florida. Office of Naval Research.

7—**Curtiss-Wright Corp.**, Wood-Ridge, N.J. $1,044,952. Spare parts for A-1, P-2 and C-121 aircraft engines. Navy Aviation Supply Office, Philadelphia.

—**Untied Aircraft**, E. Hartford, Conn. $52,092,108. TF33 engines for the Air Force. Bureau of Naval Weapons.

—**Airtemp Division, Chrysler Corp.**, Dayton, Ohio. $1,154,788. Shipboard air-conditioning equipment. Bureau of Ships.

—**General Electric**, W. Lynn, Mass. $4,101,435. Spare parts for CH-53A helicopter engines. Navy Aviation Supply Office, Philadelphia.

8—**Sierra Research Co.**, Buffalo, N.Y. $1,146,810. Shipboard operational telemetry systems and related equipment for QH-50C DASH helicopters. Buffalo. Bureau of Naval Weapons.

11—**United Aircraft**, E. Hartford, Conn. $8,300,000. Design and development of the TF30 engine for the Air Force. Bureau of Naval Weapons.

—**McDonald Aircraft**, St. Louis. $2,250,300. Hook assemblies used in carrier arresting systems for RF-4B aircraft. Navy Aviation Supply Office, Philadelphia.

—**General Electric**, Pittsfield, Mass. $2,454,337. Operational support studies for the POLARIS MK84 fire control systems and MK412 test sets. Special Projects Office.

12—**ITT Gilfillan, Inc.**, Los Angeles. $1,336,070. Air traffic control radar sets for installation aboard aircraft carriers. Bureau of Ships.

13—**North American Aviation**, Anaheim, Calif. $1,840,000. Cyroscopes. Bureau of Ships.

—**Bendix Corp.**, Teterboro, N.J. $3,809,108. Auto-pilot system components. Navy Aviation Supply Office, Philadelphia.

14—**Grumman Aircraft Engineering Corp.**, Bethpage, N.Y. $22,000,000. FY 66 procurement of A-6B aircraft. Bureau of Naval Weapons.

15—**Johns Hopkins University**, Applied Physics Laboratory, Silver Spring, Md. $4,903,155. Continued research and development work on guided missile systems. Bureau of Naval Weapons.

—**Hughes Aircraft**, Culver City, Calif. $14,000,000.Phoenix missile systems. Bureau of Naval Weapons.

18—**Collins Radio Co.**, Cedar Rapids, Iowa. $1,102,603. AN/ARC-52 radio components. Navy Aviation Supply Office, Philadelphia.

—**Aluminum Company of America**, Lafayette, Ind. $1,374,118. Aluminum extrusions for airfield matting. Navy Air Engineering Center, Philadelphia.

19—**University of California**, Berkeley, Calif. $2,276,948. Research in marine physics. San Diego, Calif. Office of Naval Research.

—**Admiral Corp.**, Chicago. $1,610,603. Radar test sets and modification kits. Bureau of Ships.

—**Boeing Co.**, Morton, Pa. $11,460,000. CH-46A helicopters. Bureau of Naval Weapons.

20—**United Aircraft**, E. Hartford, Conn. $7,010,686. Jet engine spare parts. Navy Aviation Supply Office, Philadelphia.

—**Litton Systems, Inc.**, Van Nuys, Calif. $3,900,000. Spare parts for Digital Real-Time Computers used in E-2A aircraft. Navy Aviation Supply Office, Philadelphia.

21—**Technical Material Corp.**, Mamaroneck, N.Y. $1,304,160. Radio transmitters for use at shore based radio stations. West Nyack, N.Y. Navy Purchasing Office, Washington, D.C.

25—**United Aircraft**, Stratford, Conn. $10,400,000. Material and tooling to support FY 66 procurement of CH-53A helicopters. Bureau of Naval Weapons.

—**Johns Hopkins University**, Applied Physics Lab, Silver Spring, Md. $4,885,912. Continued Research and development on guided missile systems. Bureau of Naval Weapons.

—**Sun Shipbuilding & Dry Dock Co.**, Chester, Pa. $3,220,000. Construction of the Deep Submergence Research Complex, Chamber "A" at Annapolis, Md. Director, Chesapeake Div., Bureau of Yards and Docks.

26—**Westinghouse Electric Corp.**, Baltimore. $13,461,061. Modification for airborne radar sets. Bureau of Naval Weapons.

—**Ling-Temco-Vought, Inc.**, Dallas, Tex. $1,465,000. Adapter kit pylons for F-8E Crusader aircraft. Navy Aviation Supply Office, Philadelphia.

27—**Avondale Shipyards, Inc.**, Avondale, La. $3,426,416. Activation and modernization of fleet tanker USS TAPPAHANNOCK (AO-43). Industrial Manager, Eighth Naval District.

28—**Technical Material Corp.**, Mamaroneck, N.Y. $1,817,750. Radio transmitter sets. Navy Purchasing Office, Washington, D.C.

—**Curtiss Wright Corp.**, Wood-Ridge, N.J. $1,187,238. Aircraft engine spare parts. Navy Aviation Supply Office, Philadelphia.

—**AiResearch Mfg. Co.**, Phoenix, Ariz. $1,263,160. Speed drive units for A6A and EA-6A aircraft. Navy Aviation Supply Office, Philadelphia.

—**Sun Electric Corp.**, Chicago. $2,724,736. Mobile electric power plants for use on aircraft carriers to start and service jet aircraft. Navy Purchasing Office, Washington, D.C.

—**General Motors**, Indianapolis. $1,542,011. Aircraft Engine spare parts. Navy Aviation Supply Office, Philadelphia.

—**Joseph Pickard's Sons Co.**, Philadelphia. $1,888,256. Fabrication of matting for SATS (Short Airfield Tactical Support) construction. Naval Air Engineering Center, Philadelphia.

29—**Canadian Commercial Corp.**, Montreal, Canada. $2,415,878. Transport aircraft engine spare parts. Navy Aviation Supply Office, Philadelphia.

—**General Dynamics**, Rochester, N.Y. $3,892,912. Radio receivers for use on naval ships. Bureau of Ships.

AIR FORCE

1—**Boeing Co.**, Wichita, Kan. $1,372,384. B-52 wing pylons. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

4—**Boeing Co.**, Seattle, Wash. $1,934,360. Assembly, installation and checkout of MINUTEMAN missiles. Grand Forks, AFB, N.D. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Garrett Corp.**, Phoenix, Ariz. $1,730,746. Engine starters for F-4 aircraft. Phoenix. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

5—**Douglas Aircraft**, Santa Monica, Calif. $2,856,458. Procurement of THOR space boosters. Space Systems Div., (AFSC), Los Angeles.

—**Douglas Aircraft**, Santa Monica, Calif. $2,257,740. Production of GENIE rockets for training. Santa Monica and Newport Beach, Calif. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**General Motors**, Indianapolis. $5,277,481. T-56 aircraft engines. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**General Electric**, Cincinnati, Ohio. $2,125,000. Development work on engines for the C-5A aircraft. Aeronautical Systems Div. (AFSC) Wright-Patterson AFB, Ohio.

—**Republic Aviation Corp.**, Farmingdale, N.Y. $2,512,920. Engineering services for F-105 aircraft. Mobile Air Materiel Area (AFLC), Brookley, AFB, Ala.

6—**Electro-Optical Systems**, Pasadena, Calif. $1,580,200. Development of an ionization thruster for spacecraft. Systems Engineering Group, Research and Technology Div. (AFSC), Wright-Patterson AFB, Ohio.

—General Motors, Indianapolis, $1,027,730. Spare parts for T 56 aircraft engines. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

7—Continental Aviation and Engineering Corp., Toledo, Ohio. $3,210,525. J 69 engines for target drone aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—International Telephone & Telegraph Corp., Paramus, N.J. $1,007,201. Computer services and programming for the SAC control system, Omaha, Neb. Electronics Systems Div. (AFSC), L. G. Hanscom Field, Mass.

—North American Aviation, Los Angeles. $2,208,330. Production and installation of 335-gallon wing tanks. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—Philco Corp., Philadelphia. $5,555,933. Aircraft control and warning system. Philadelphia. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

8—Aerodex, Inc., Miami, Fla. $1,261,410. Overhaul of R 3350 aircraft engines, Miami. San Antonio Air Materiel Area (AFLC) Kelly AFB, Tex.

—Curtiss Wright Corp., Wood-Ridge, N.J. $2,066,860. Procurement of R 1820 aircraft engines. Wood-Ridge. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

11—Republic Aviation, Farmingdale, N.Y. $2,011,858. Production of rocket catapults for aircraft ejection seats. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—FMC Corp., New York City. $1,872,500. Production of rocket engine fuel. Baltimore. Middletown Air Materiel Area (AFLC), Olmsted AFB, Pa.

Sunbeam Electronics, Fort Lauderdale, Fla. $1,328,404. Production of aircraft flight instruments, Fort Lauderdale. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

12—Douglas Aircraft, Tulsa, Okla. $37,820,100. Modification of C 135 aircraft in support of the NASA APOLLO program. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Mass.

—Litton Systems, Inc., Woodland Hills, Calif. $11,553,000. Production of inertial navigation systems for F 4 aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Martin Marietta, Denver, Colo. $6,655,600. TITAN II missiles and related equipment. Littleton, Colo. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—Fairchild Hiller Corp., St. Augustine, Fla. $2,427,594. Inspection and repair of C 130 aircraft. St. Petersburg, Fla. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—Boeing Co., Wichita, Kan. $2,400,000. Modification of B 52 bomb bays. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

14—Litton Systems, Woodland Hills, Calif. $1,302,047. Procurement of spare parts for navigation system used on F 4 aircraft. Middletown Air Materiel Area (AFLC), Olmsted AFB, Pa.

—Douglas Aircraft, Santa Monica, Calif. $3,000,000. Production of spare boosters. Santa Monica. Space Systems Div. (AFSC) Los Angeles .

15—Sylvania Electric Products, Waltham, Mass. $1,000,000. Communications equipment for Minuteman Wing I at Malmstrom AFB, Mont. Buffalo, N.Y. and Waltham. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—Garrett Corp., Torrance, Calif. $1,772,393. Jet engine analyzers. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

18—Lockheed Missiles & Space Co., Sunnyvale, Calif. $2,880,308. Hardening technology studies for missile sites. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—Aerojet-General Corp., Sacramento, Calif. $5,200,000. Production of TITAN II propulsion systems. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—Lockheed Aircraft Corp., Marietta, Ga. $10,000,000. Production of C 130 aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

19—Federal Electric Corp., Paramus, N.J. $1,830,058. Production of command and control communications equipment. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Mass.

20 General Motors, Indianapolis. $6,330,000. Procurement of T 56 engines and related equipment. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

Cessna Aircraft Co., Wichita, Kan. $1,150,000. T 37 aircraft, spare parts and ground equipment. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

General Electric, Philadelphia. $1,710,638 and $10,000,000. Design, development, fabrication, flight test and data analysis of re-entry vehicles for the NIKE ZEUS program; and research and development of the Mark 12 re-entry program. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

Thiokol Chemical Corp., Bristol, Pa. $36,952,148. Production of Stage I Minuteman motors, Brigham City, Utah. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

Westinghouse Electric Corp., Baltimore. $1,418,645. Production of low frequency communication sets. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

Philco Corp., Newport Beach, Calif. $1,200,000. fuzing and arming tests and evaluation of re-entry vehicles. Ballistic Systems Div. (AFSC), Norton AFB, Okla.

21 Philco Corp., Newport Beach, Calif. $30,201,773. Design, development, fabrication, flight test and data analysis of re-entry measurement vehicles, Newport Beach. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

International Harvester, San Diego, Calif. $1,224,000. Auxiliary gas turbine power units for CH 47 aircraft, San Diego. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

Aerojet-General Corp., Sacramento, Calif. $2,126,000. Production of Stage II test motors for Minuteman missiles. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

General Precision, Inc., Little Falls, N.J. $1,390,585. Spare parts for maintenance and overhaul of navigation equipment on C 141 aircraft, San Marcos, Calif. Middletown Air Materiel Area (AFLC), Olmsted AFB, Pa.

B. F. Goodrich, Akron, Ohio. $1,279,023. Production of tires for fighter aircraft. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

Goodyear Co., Akron, Ohio. $2,198,174. Production of main wheels and brakes for F 4 aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

25 Marquardt Corp., Van Nuys, Calif. $4,072,356. Work on a classified program. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

Bendix Corp., Teterboro, N.J. $1,700,866. Spare electronic components for C 141 aircraft. Middletown Air Materiel Area (AFLC), Olmsted AFB, Pa.

Vinnell Corp., Los Angeles. $1,302,927. Maintenance and operation services at Point Barrow Air Force Camp, Alaska. Alaskan Air Command.

26 Aerojet-General Corp., Sacramento, Calif. $34,833,725. Production of Stage II Minuteman motors. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

27 Litton Systems, Inc., Woodland Hills, Calif. $2,711,736. Spare components for maintenance of the inertial navigation system on F 4C aircraft. Middletown Air Materiel Ar (AFLC), Olmsted AFB, Pa.

Radiation Inc., Melbourne, Fla. $1,044,126. Modification of automatic tracking telemetry antennas used in space tracking. Palm Bay, Fla. Air Force Eastern Test Range, Patrick AFB, Fla.

Collins Radio Co., Cedar Rapids, Iowa. $1,038,444. Production of components for high frequency communication sets. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

Sperry Rand Corp., Great Neck, N.Y. $1,287,920. Production of components for radar sets for C 141 and HC 130 aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

28 Monmouth Electric Co., Neptune, N.J. $1,393,016. Communication equipment. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—Boeing Co., Seattle, Wash. $27,235,000. Modernization of MINUTEMAN. Whiteman AFB, Knob Noster, Mo. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—Bendix Corp., Teterboro, N.J. $1,230,186. Flight instruments for F 111 aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—Kollsman Instrument Corp., Elmhurst, N.Y. $6,565,761. Procurement of spare parts for mapping and survey systems. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—Systems Development Corp., Santa Monica, Calif. $6,736,143. Design and development of electronic information and communication equipment for air defense systems. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Mass.

—Sperry Rand Corp., Washington, D.C. $11,617,270. Electronic data processing systems, Philadelphia, 2750th Air Base Wing, Wright-Patterson AFB, Ohio.

—Fairchild-Hiller Corp., Hagerstown, Md. $1,085,730. Production of spare parts for F 105 aircraft, Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

29—General Motors, Indianapolis. $4,286,000. T 56 aircraft engines. Aeronautical Systems Div. (AFSC), Wright-Patterson AF, Ohio .

—F. C. Stiles Contracting Co., Grand Rapids, Mich. $2,857,418. Manufacture of two-story relocatable family housing units, 2750th Air Base Wing, Wright-Patterson AFB, Ohio.

—American Electric, Paramount, Calif. $6,400,846. Production of ordnance. Long Beach, Calif. Ogden Air Materiel Area (AFLC) Hill AFB, Utah.

—Garrett Corp., Los Angeles. $2,108,141. Spare parts to support the control of the data computer on F-4 aircraft. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—Martin-Marietta, Denver. $1,200,000. Environmental control equipment for the TITAN II missile. Littleton, Colo. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—Boeing Co., Wichita. $2,114,000. B-52 flight test program. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

Three Army Missiles to be Maintained by Anniston Army Depot

Maintenance depot missions for three Army missile systems have been established at Anniston, Ala., Army Depot.

The missiles, all managed by project offices at the Army Missile Command, Redstone Arsenal, are the Lance, Shillelagh and TOW. They will be shipped from production plants to Anniston, where they will be stored, maintained and issued to units.

Decision to place these missions at Anniston Ordnance Depot was based on the opportunity to expand and fully utilize existing facilities and trained personnel at a minimum cost to the Army.

Lance is the Army's newest battlefield ballistic missile and the first to use pre-packaged storable liquid propellant. It will complement tube artillery and will extend the division commander's capability for nuclear and non-nuclear supporting fire. It is now undergoing developmental flight testing at White Sands Missile Range, N.M.

The Shillelagh is an accurate, direct fire guided missile which is launched from a combination gun-launcher. It has been selected as armament for the General Sheridan reconnaissance vehicle and the M60 tank. It will be effective against tanks, troops and field fortifications.

TOW is being developed for use by infantrymen against heavily armored tanks. The tube launched missile may be carried by troops or in a variety of light vehicles.

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New Test Facility Operational at Wright Patterson AFB

A new "electronic shooting gallery" is in operation at Wright-Patterson Air Force Base, Ohio, to give researchers one of the nation's most versatile test grounds for airborne reconnaissance devices.

The test range is able to furnish detailed performance data of photographic, electro-optical, infrared and radar detection instruments.

Project director Robert E. Wallace, Jr., of the Air Force Avionics Laboratory's Reconnaissance Division, envisions future additions to the range to test various new reconnaissance sensors now in the research phase.

Major elements of the range are located along the east-west runway at Wright Field. They include five concrete photo pads 2,000 feet apart and painted with white photo-resolution stripes. The stripes are graded in length from 28 feet down to nearly six inches. Two asphalt slab targets, each 10 by 10 feet, are painted in various shades of gray.

Elsewhere on the base are L-shaped patterns of electrically heated target pads, for infrared resolution, spaced at intervals of 2½ feet to 50 feet apart. Another asphalt pad, 51 by 87 feet, contains eight heat-controlled targets for infrared thermal sensitivity tests.

Two hundred trihedral reflectors have been placed on the field to test radar detection apparatus for purposes of resolution and geometric fidelity measurements.

Called a Recon Multisensor Target Range, the installation is capable of handling simultaneous comparative tests of airborne reconnaissance devices. Most aircraft "shoot" from altitudes of 2,000 to 10,000 feet in checking the performance characteristics of their detection instruments.

One key feature is that the new range is instrumented to furnish detailed ground measurements concurrent with the airborne tests. During test flights, ground technicians will record meteorological data at the site such as haze, relative humidity and temperature, etc., as well as other readings pertinent to the target itself. This information is then used in interpreting the performance of the airborne apparatus.

Researchers at the Avionics Laboratory, a unit of the Air Force Systems Command's Research and Technology Division, say the range also is available to Army, Navy and other Air Force units for both operational and research support.

U.S.-U.K. Agreement Signed for Joint Lift Engine Development

The Minister of Aviation of the United Kingdom and the Secretary of Defense have signed a memorandum of understanding approving a joint project for development of an advanced lift jet engine. The work will be performed by Rolls Royce, Ltd., and an American contractor yet to be chosen.

Engines of this kind are used for V/STOL aircraft. The development could have wide application to transport as well as tactical aircraft should it result in a significant advance in lightweight engine technology.

By collaborating in this project, the U.S. and U.K. hope to achieve substantial savings in development costs in addition to getting an engine incorporating the best of each contractor's technology. As a further gain, it is hoped that the experience accumulated by the two governments in negotiating this agreement and supervising the project, can simplify the problems of and encourage further collaboration in defense research and development.

The U.S. contractor for the joint project, which is scheduled to begin early next year, will be selected on a competitive basis.

Navy Adopts New Contracting Procedure for Ship Building

The Secretary of Defense has approved plans for the trial application of a new contracting procedure in ship construction. This procedure will be comparable to the "total package" concept used in procurement of the Air Force C-5A heavy transport aircraft.

The new Fast Deployment Logistics Ship (FDL) has been chosen as the prototype for testing the new concept. It is to be a large fast vessel, equipped with lighters and on-board helicopters for off-loading where there are no port facilities. Its primary mission is the rapid deployment of ground force equipment in an emergency.

The new construction plan involves a single contract for the design, construction and certain support functions of a number of ships of the same type. Substantial savings and increased efficiency are foreseen.

The Navy will select a design and production proposal for the FDL program on the basis of cost and performance, covering an appropriate portion of the total life cycle. Heretofore, contracts have covered ship construction only.

Qualified firms will submit design and production proposals against Navy performance and reliability standards.

Thus, the Navy will place a premium on resourcefulness and ingenuity in engineering and design. There will be no specification by the Navy of detailed ship characteristics or of materials to be used. Instead, bidders will be required to include specific guarantees of overall cost and performance.

Only those firms competing for the production contract will be permitted to compete for the design contract. This will insure that design proposals are technically feasible and that cost figures are responsible.

Project Manager for the FDL is Rear Admiral Nathan Sonenshein.

Technical Thesaurus Planned by DOD to Broaden Information Exchange

Compilation of a technical thesaurus for use in communication among Department of Defense activities has been started by Dr. John S. Foster, Jr., Director of Defense Research and Engineering.

Known as Project LEX, this task is a major phase of DOD's current program to broaden effective exchange of technical information. Automation has emphasized the need for words and terms that express concepts of units of information. Equally important is a guide to these terms. Project LEX seeks to fill this need with the thesaurus approach.

Scientific and technical terms will be gathered from all phases of DOD activities. The compilers will also take into consideration technical terminology from related professional groups, other Government activities, industry and educational institutions.

The Office of Naval Research, which is responsible for preparation of the thesaurus,has created a 14-man project task force to accomplish the task. Represented on the task force are the three Military Departments, the Defense Documentation Center, the National Security Agency and the Defense Intelligence Agency. J. Heston Heald, of Dr. Foster's Office of Technical Information, is project director.

A 15-month work schedule is planned and publication by the Government Printing Office is expected before the close of FY 1967.

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Material in the *Bulletin* is selected to supply pertinent unclassified data of interest to the business community. Suggestions from industry representatives for topics to be covered in future issues should be forwarded to the Business & Labor Division.

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The Army's Accent on Seeing

by

Lt. Gen. William W. Dick, Jr., USA

It has been said that an Army travels on its stomach, but to be an effective force a military unit must also have good eyes to carry out its mission.

For this valuable asset, the U.S. Army relies heavily on American industry.

Heading the list of the Army's optical requirements is the very obvious field of fire control instruments without which most weapons would be ineffective. Still another area of need is that of combat surveillance and target acquisition. This covers a wide range of effort—from vastly improved photographic lenses to totally new types of night vision devices. And, with maturity of nuclear weapons, there is the future requirement for protective devices for the eyes of tomorrow's military man.

Eye Glasses and the Combat Soldier.

The basic asset of any army is the individual combat soldier. Today he must be prepared to operate effectively, on very short notice, in any climate from soggy, humid jungles, to deserts, to the snows and tundra of the Arctic. His ability to see is the *sine quo non* of his ability to be an effective soldier.

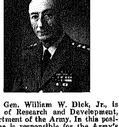
For example, take the present day situation in which U.S. troops are conducting search and clear operations in Vietnam. Any impairment in the ability of these troops to see—no matter what the degree or the length of time—reduces their effectiveness. Consider this premise in the light of the fact that over one-third of the men in today's active Army wear prescription eye glasses, and that of this number almost 40 per cent require annual replacement.

Now, to carry the problem a bit further, Fort Hood, Tex., is the home of two of the Army's combat ready divisions—the First and Second Armored Divisions. The U.S. Army Hospital at Fort Hood, over a recent six-month period, was called on to repair or replace 800 sets of eyeglasses per month. This figure reflects a replacement and repair rate for units in training; however, under the greatly increased hazards of actual combat operations this rate accelerates greatly. What makes this so important to the Army is that in the past, and even today, soldiers who lose or break both pair of their glasses are actually evacuated from the combat area, and they are then *de facto* battle casualties until new sets can be fabricated by the medical optical shop. The time lost here is hard to compute, but it is estimated that with today's methods about three hours is required to pre-grind, prepolish, cut, edge and insert spectacle lenses, to say nothing of the time required to remove the soldier to the rear, process him and return him to his unit.

So, the Army has need for a device or system which will provide a rapid automatic means for fabricating eyeglasses. Not only is it important to reduce the amount of time lost, but it is hoped that the entire process can be simplified, thereby reducing the training time of technicians as well as cutting down the logistical aspects by dispensing with the need for carrying about some 800 pre-ground prescription lenses. Ultimately, what the Army would like to have is a unit capable of quickly fabricating—say in about 10 minutes—any desired lens from a single, nonsegmented, non-foci source of optical material. Hopefully, this unit could be of a size and weight capable of being moved about in a ¼-ton trailer or truck bed.

Protection Against Flash Blindness.

Today's and tomorrow's battlefield poses a number of problems which never concerned the soldier of the past. The most obvious is the nuclear weapon, with its radiation, blast and thermal effects. A side factor, however, and one sometimes overlooked, is that such weapons are also capable of putting out of action a soldier who has survived all the effects of the three major forces of radiation, blast and heat. A soldier outside the effective range of these forces may still become a casualty through flash blindness. The effects of flash blindness, though temporary, may last from less than a second to more than 30 minutes. And, of course, there is the permanent type of retinal damage—chorioretinal burn. Therefore, a soldier who cannot see to carry out his mission is just as much a casualty as one who has suffered serious burns, blast damage, or ionizing radiation.



Lt. Gen. William W. Dick, Jr., is Chief of Research and Development, Department of the Army. In this position he is responsible for the Army's entire research and development program. He held prior assignments in OCRD as Dep. Chief and as Dir. of Special Weapons.

As a result, the Army—along with the other Services—is avidly seeking a solution to the problem of preventing flash blindness and retinal burn. Our approach follows two basic courses. One entails the use of a protective system or device such as glasses or goggles to attenuate or reflect oncoming energy. The second involves modifying the eye's response—either by pharmacological means or by human engineering design of instruments, so that visual impairment is either obviated or mitigated. In the first of these, for example, we would hope that a device or system can be developed which will be normally optically transparent, but which, on activation by the first pulse of a nuclear detonation, will "close" or darken to a transmittance of 0.01 per cent or less in 50 microseconds. Then, when the pulse has ended, the device will open immediately so that normal vision is instantly restored.

We have been working on this, as a matter of fact, for about five years now. Our first efforts were with reversible organic phototropic materials. Organic solution systems were developed which achieved the required optical density in the desired amount of time, but they darkened under normal daylight. Still other approaches were tried but were not found to be feasible. Recently, a number of new phototropic dyes were synthesized by one of our contractors and their transmittance characteristics determined. Of these, 11 showed one or more strong absorbtion bands in the 400 to 800 millimicrons. Under tests it has been found that reaction in these polymethines is initiated in less than 40 nanoseconds and can produce an optical density of 3.8 in 100 microseconds. We have also been working on phototropic thiazines hoping to come up with an eventual solution to this vexing problem.

Visual Problems of the Helicopter Pilots.

Moving to another new problem area, today's Army has a greater need for rapid tactical mobility than ever before. Two factors have brought this to pass: the incredible increase in modern weapon effectiveness, and the nature of today's and tomorrow's battlefield. In the first case, a real threat of annihilation awaits a unit which stays long in one spot in the face of modern firepower; and, in the second case, because of the communist technique of what they call "wars of liberation" with primary reliance on guerrilla action such as we are seeing in Vietnam, speed in movement is essential in combatting this type foe.

The Army is now meeting this demand for greatly increased tactical mobility to a great extent through aerial vehicles. Last June an air mobile division was activated at Fort Benning, Ga. This new and completely unique type organization to the Army will have over 430 aircraft assigned to it—mostly helicopters. Even in today's conventional infantry division there are approximately 100 aircraft. This is an example of changing tactics in the Army which are bringing forward new problem areas.

The case in point is that, while greater reliance is being placed on helicopters, it is suspected that helicopter pilots may experience what scientists call "extreme electroencephlographic photic action." The effects of this are dizziness, disorientation and even nausea which can occur in a pilot from the rotating helicopter blades. The effect is similar to the flashing light of a stroboscope. The intermittent light flashes may produce a photic driving effect in a few sensitive individuals and this, in turn, evokes the dizziness and confusion. This subject is under study to determine if it is a serious issue for helicopter pilots in flight.

In this same area, helicopter pilots in Vietnam have asked for assistance in solving a helmet shield problem they have experienced. Pilots use a clear plastic face shield to provide protection against flying fragments from small arms fire. This plastic shield develops numerous small scratches that obstruct the visual field. A more resistant plastic and a scratch-removing polish are required to solve this practical need.

Because of an increasing demand for aviation personnel, the Army is also studying the possibility of revising its color vision testing methods as well as standards for acceptance.

Normal color vision has historically been an intrinsic part of the physical standards maintained for military and civilian aviators and aircrew members. Until recently this requirement has been accepted without challenge due to the abundant number of applicants versus the number of positions available. Today, this is no longer the case.

So, when we looked at our rejection statistics, we found that about 50 per cent of those who are rejected are rejected because of visual defects. In view of the percentage of the male population known to be affected by imperfect color vision, this requirement alone appears to contribute significantly to the number of applicants rejected. It becomes obvious, then, that an easement of this standard could result in a larger number of otherwise qualified men, particularly if it is found that an aviator's lack of color vision—in today's electronic era—does not impede flight safety and his ability to carry out his mission.

Therefore, we believe that there is a need for a color vision standard and test methodology that is more closely related to flight safety and mission accomplishment.

Eye Armor.

Closely allied to the helicopter pilot problem is one involving the protection of the combat soldier. It was found that during World War II almost eight per cent of all aircrew casualties were caused by secondary fragments. Of these, plexiglass fragments were a major cause, particularly because of the vulnerability of the human eye to tiny fragments of this type. With the large number of aircrewmen foreseen for tomorrow's Army as well as the number of ground combat men who will be riding in aerial vehicles, this threat takes on new urgency.

It has been estimated by Army opthamalogists that over 50 per cent of Army eye injuries in battle could have been prevented by eye armor. To that end research was started in 1954 on ballistic susceptibility of eyes and lenses to various types of small high velocity missiles. The work is still continuing. We are attempting to learn precisely what happens to the eye when it is struck by such things, to test various types of protective materials and to determine the results of the two in combination. It has been learned, for example, that the unshielded eye in certain cases may provide itself better protection against impact by missiles below the eye's ballistic limit than can be obtained from some lenses. However, the results here may well be minor corneal contusions or internal structural damage. In effect, an inexpensive simple form of eye armor for the soldier of the future is definitely being sought.

Accuracy Through Fire Control Instrumentation.

Up to this point concentration has been placed on the problems facing the Army in regard to the "seeing" capability of the individual. Let's assume these problems have been solved. We have a soldier with 20/20 vision whose eyes are protected from small missiles, flash blindness and retinal burn. Now, we hand him a highly lethal weapon with a range capability upwards of a mile. For some of the weapons he will receive, his regular, unmagnified vision will suffice, but for others he will require the assistance of fire control instruments if his weapon is to be effective.

The growth of fire control instrumentation and the concurrent growth of optical components is yet another area where the Army has mounting requirements. Whereas the total World War I purchase of military optical items amounted to something like $65 million, our World War II effort used about $100 million per year—five times as much in both raw glass and finished instruments.

By the time of the Korean conflict, there was no real glass shortage and the manufacturing base proved adequate. Today we believe that we are far better prepared—in terms of having a ready base upon which to expand, and better prepared in the sense that we will have instruments which will be technologically superior to those of any potential enemy. But the challenge is great. Accuracy has always been a high requirement for battle success, but the need to achieve accuracy on the future battlefield is even greater. Many targets will be moving at high rates of speed, they will be fired upon at greater ranges, and the high cost of the missile or projectile, coupled with the potentially disastrous results of a miss, require not only a first round hit but a first round kill.

One of the Army's new anti-tank weapons currently under development is an example. Should the Army in the next decade become involved in ground combat operations in Western Europe, we will face an enemy which features large armored forces. To offset this numerical superiority the U.S. will field greatly superior tanks of its own plus a new family of anti-tank weapons which will prove capable of defeating any known tank currently in operation or foreseen for the 1970 decade. One such weapon is the TOW (Tube launched, Optically automatically tracked, and Wire guided). This weapon will employ a guided missile using an improved con-

(Continued on Page 8)

Two-Step Formal Advertising in the Navy

by

RAdm. J. J. Appleby, SC, USN

Naval power has long been associated with the concept of flexibility, the characteristic that permits the United States to respond effectively to an infinite variety of critical situations all over the world.

But the flexibility of naval forces that is so important to our defense posture didn't just happen. It is the product of the dynamic outlook of imaginative men—men who have taken new developments and discovered new ways to use them at sea.

This dynamic attitude permeates the entire Naval Establishment and all phases of its operations and support fuctions.

In the concept of two-step formal advertising, Navy men have seen a new development that adds another measure of flexibility to the procurement process. And they have enthusiastically applied this technique in a characteristic manner.

The rules of formal advertising are well known among companies that do business with Uncle Sam. Basically they are simple: whenever we have sufficient time and firm specifications, the contract goes to the competitor who offers the Government the best price and who has the know-how and capacity to produce what we need.

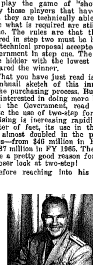
Yet, most negotiation situations are fully as competitive as any formally advertised transaction. What is lacking are specifications firm enough to make an award primarily based on price. In a large number of cases the specifications, while not always as clear cut as required for the one-shot formal advertising procedure, were not so vague or complex as to preclude clarification by the simple expedient of discussions between the contracting officer and interested suppliers.

It was to provide a means for such clarification, without prejudice to other bidders, that gave rise to this approach to procurement. In a sense, two-step formal advertising stands somewhere in between conventional formal advertising and negotiation. What it does, in effect, is to separate the question of what is being bought—i.e., whether an offerer demonstrates a satisfactory understanding of and a sound approach toward fulfilling the requirement—from the question of how much money is involved and the capacity of a company to produce it. In short, step one determines the responsiveness of a bidder to the terms of the requirement. Is he technically capable of making what is required? Are there some questions about the specifications that can be cleared up without prejudice to the others? Should he bid, considering the delivery and performance requirements?

These are the kinds of questions that are resolved in the first step, and not one word is uttered at this point about price, credit, or capacity. The idea is to get everybody lined up who actually has the technical know-how to do the job, to eliminate those who cannot and to be sure everybody understands what the Government wants. Aside from the benefits to all competitors, it gives the Government a chance to avert the "buying-in" practice. We can be sure that whoever is low bidder is able to deliver the goods—from a technical standpoint.

It is at the second step, then, that we play the game of "showdown." Only those players that have shown that they are technically able to produce what is required are still in the game. The rules are that the price offered in step two must be based on the technical proposal accepted by the Government in step one. The responsible bidder with the lowest price is declared the winner.

What you have just read is a good thumbnail sketch of this innovation in the purchasing process. But if you are interested in doing more business with the Government, read on, because the use of two-step formal advertising is increasing rapidly. As a matter of fact, its use in the Navy has almost doubled in the past two years—from $46 million in FY 1964 to $87 million in FY 1965. That seems to be a pretty good reason for taking a closer look at two-step!



RAdm. Jack J. Appleby, SC, USN, serves as Deputy Chief of Naval Material (Material and Facilities) and is a veteran of 27 years naval service. Prior to assuming his present assignment on April 7, 1966, Adm. Appleby served as Executive Officer of the Aviation Supply Office, Philadelphia, from 1958–1960 and as Commanding Officer, Navy Ship's Store Office, Brooklyn, N.Y., from 1960–1966.

Before reaching into his bag of purchasing procedures, the Navy contracting officer considers the nature of the item required and the conditions of the market in which it will be purchased. If it looks like he could use conventional formal advertising except for a lack of definitive specifications, two-step formal advertising may be the answer. But there are other preconditions to using this approach. At this point he needs help from the technical side of the house.

The contracting/technical team must establish that they have definite criteria or standards by which they can evaluate technical proposals. They take a look at the market and assure themselves, insofar as possible, that more than one technically qualified source is available.

Finally, the contracting officer must determine that the date the material is required allows enough time for the use of two-step and that a firm fixed-price contract (with or without escalation) can be awarded.

Given these conditions, the time has arrived for the preparation of the solicitation document—the most critical phase of any buy. In two-step formal advertising, the solicitation document is called a "request for technical proposal."

Here is where the lines of buying influence from the technicians are particularly apparent. In two-step, the contracting officer calls on the technician's specialized knowledge for much of the substance of the request for technical proposal.

This solicitation document provides the prospective bidder with the best practicable description of what the Government wants. It tells him what the Government needs in terms of drawings, data, presentations, etc.

You won't have to guess at how the Government will evaluate your technical proposal — the criteria to be used in the evaluation of proposals is included in the solicitation document. Although delivery and performance requirements are not items for evaluation in step one, a forthcoming change to the Armed Services Procurement Regulation will provide that information about them may be included in the solicitation documents to help prospective bidders decide whether or not they want to submit a technical proposal.

With the completion of the request for technical proposal, the Government is ready to enter the market; the solicitation is mailed to qualified bidders and is synopzied in the *Commerce Business Daily.*

The technical/contracting team is now back in session evaluating technical proposals received in response to the solicitation. Which engineering approaches are feasible? Will the proposed special manufacturing processes produce what we need? Which special testing techniques will tell us what we want to know? What are the latest developments in the market?

The answers to these questions may

(*Continued on Page 25*)

AFSC Electronic Systems Division Command-Control-Communications

by
Maj. Gen. John W. O'Neill, USAF
Commander, Electronic Systems Division
Air Force Systems Command

In the July issue of the *Bulletin*, Lieutenant General W. A. Davis, Vice Commander of the Air Force Systems Command (AFSC), explained AFSC's mission and organization. Stating that the Electronic Systems Division (ESD) is one of the four AFSC product divisions in which contractors have their primary interest, General Davis succinctly defined our role as follows:

> "The Electronic Systems Division is responsible for development, acquisition and delivery of electronic systems and equipment for command and control of aerospace forces. This includes ground-based warning, aerospace support systems, satellite tracking and ground assessment of objects in space."

ESD is the major development and procurement agency for electronic information and communications systems for the Air Force and for such unified and specified commands as the North American Air Defense Command (NORAD), Strategic Air Command (SAC) and U.S. Strike Command (USSTRICOM). Space does not permit discussion of the 29 major programs and scores of lesser but important projects which we are currently pursuing. Later, I'll mention a few representative ones.

As General Davis pointed out, one measure of the importance of our product is our budget of over $314 million of FY 1966 alone. With more than 10,000 people in the Hanscom complex located near Bedford, Mass:—4,300 in ESD itself—we are also a world-wide organization installing systems and equipment or providing support to improve global command-control-communications at over 900 sites. We have established five detachments and many field offices in such places as Wiesbaden, London, Paris, Rome, Athens, Ankara, Tokyo, Manila and many other locations. With this world-wide organization ESD is working hard to provide the kind of military command and control capability which the late President Kennedy envisaged in 1961 and which President Johnson and Secretary McNamara continue to regard as vital to implement national policy.

While ESD is naturally proud to be the primary organization for the development and acquisition of command control systems for the Air Force and for several unified and specified commands, we do not establish all such requirements for the entire Air Force. It would be presumptuous for us to attempt to tell the commander of a major (unified or specified) command what he needs to know to be able to exercise his command and control responsibilities effectively. On the other hand, the commander cannot possibly keep up with the technology which might be applied to his problems. So, in practice, the using commands plan their own tentative requirements based on such factors as force structures, mission and operational concepts. We are called in during early planning stages for analytical and technical inputs. Once a commander is satisfied that a plan will meet his foreseeable requirements, ESD takes over to develop the system.

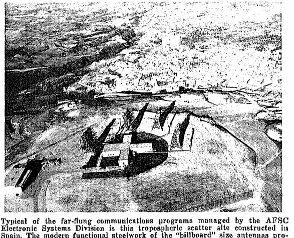
Experience has taught us that system growth should be evolutionary and that each system must be tailored to the user's particular needs. Accordingly, ESD has to maintain a continuing close relationship with the users. More and more we are finding it necessary to move people into the field so we can be truly responsive to a combat commander's needs. For example, we have a technical group at Omaha with SAC on the Strategic Air Command Control System. In like manner we have ESD people stationed at Cheyenne Mountain with the 425L NORAD Operations Center and at U.S. Strike Command headquarters with the 402L USSTRICOM Command and Control System.

Recently we have been selecting people to work with users to identify systems before development begins. We have already done this for a command and control system for the Military Air Transport Service (MATS) and for an Advanced Tactical System.

Before mentioning specifically what ESD does, it might be well to define our end product: an L (M or N) system is a composite of equipment, skills and techniques capable of supporting an operational role. A complete system includes related facilities, equipment, material, services and personnel required for its operation to the degree that it may be considered a self-sufficient unit in its intended support environment. Because many persons find it difficult to categorize our projects, I believe it may help if I discuss some of them according to the ESD organizational arrangement. As I indicated earlier, space does not permit a detailed listing of all of our many projects. Neither shall I discuss every block of our organizational chart.

Essentially we have three mission deputates under which virtually all of our hardware-oriented projects fall. These are the deputates with which industry is primarily concerned. In short, their business is to translate a firm requirement into an operational system.

One of the most representative important projects of the Deputy for Command Systems is the 473L Headquarters Command and Control System. Now being installed in the Pentagon, this highly complex system will provide information on Air Force operations and resources to support de-



Typical of the far-flung communications programs managed by the AFSC Electronic Systems Division is this tropospheric scatter site constructed in Spain. The modern functional steelwork of the "billboard" size antennas provides a stark contrast to the ancient town in the background.

cision making in the face of rapidly developing contingencies of an operational nature. While a version of the 473L system is actually in operation at the Air Force Command Post, a new data processing subsystem will provide a step forward in speed and capability. Improved techniques and equipment are gradually being phased into operation.

On March 1 of this year we turned over to the Commander-in-Chief of SAC the 465L Strategic Air Command Control System. Basically, this is a huge two-way system sending information into SAC headquarters and sending operational instructions and commands outward to the SAC force. Now being tested operationally by SAC, the 465L system should give the SAC Commander in Chief a more advanced, much faster method of managing weapons and equipment as well as the means to exert positive control, in even greater depth, over his command.

I've used these two systems to indicate the type of thing we do in this area. While the purposes of command systems are similar, each of the many systems under development by ESD varies considerably from all others both in terms of hardware and software.

While industry is interested primarily in our hardware, I must add that a system does not become a system until the hardware is energized by software. We use this term to include all of the information which a given system must process, plus the set of instructions (computer program) which must be given to the computer so it can handle the information accurately and promptly. And it must include the set of instructions (methods and procedures) which the human operators of the system need to make the hardware and the computer program do what they are supposed to do. Though I shall confine the remainder of this article to hardware, I want to make clear that we are equally concerned with software.

Our Deputate for Surveillance and Control Systems is perhaps best known for the development of the SAGE and BMEWS systems which have been well described in news media. Much newer than SAGE is the 416M Backup Interceptor Control System (BUIC). BUIC facilities are high speed, computerized control centers which will furnish air defense commanders with up-to-the-minute information on any airborne threats. Each center is really a small direction center which, thanks to technical advances, is capable of controlling all air operations in an air defense sector. Within each sector one or more BUIC centers will be located outside of probable target areas. The intent is to provide a survivable semi-automatic defense system by dispersing facilities widely. On September 1, 1965, we turned over to the Air Defense Command the first operational BUIC facility at North Truro, Mass.

Because of the world situation, the role of tactical airpower has become increasingly important. ESD has recently established an Office of Assistant for Limited War. Other ESD elements have been reorganizing to respond to the Southeast Asian crisis. Typical of our efforts in this area is the 407L Tactical Air Control System. Into one air transportable system we are packaging all mobile communications and electronics systems needed for command and control of tactical aerospace operations. Phase I of this program, which began in FY 1965, concentrated on the procurement of equipment to meet the critical deficiencies of tactical operations. This equipment was procured off the shelf or with minimum engineering. Today, in Phase II of this program, we are evolving a systems plan to provide an improved operational capability for tactical forces in the 1968 to 1970 period.

Even before we complete this project we are looking forward to advanced tactical systems. Our planning efforts are directed to such questions as "How can we best detect low-flying aircraft?" and "How can we furnish real-time response to requirements for close air support?" These questions are also the basis for proposed industrial planning study efforts of the next several months.

During the two years since its establishment, the Deputate for Communications Systems has acquired an extensive communications program whose products have been developed for the Defense Communications Agency, for the Air Force and for other elements of the Defense Department. Perhaps the most extensive of these is the 486L European-Mediterranean Tropospheric Scatter System which now includes some 100 sites located in five European countries stretching from Turkey to England.

Industry is also concerned with two other ESD deputates which support the hardware-oriented ones I've just discussed. The Deputy for Engineering and Technology relates new theories and discoveries with our military command-control-communications requirements. By identifying and pushing the state of the art, this deputate provides engineering and technical support to other ESD mission elements.

With an eye always to the future, the Deputy for Advanced Planning devises or considers what form a system may take or what our requirements might be from 10 to 20 years ahead. This responsibility requires conceptual, feasibility and cost studies of the next generation of systems.

This has been only a brief summary of some of ESD's projects. Ahead lie many challenges—challenges for which industry can suggest new developmental and acquisition possibilities. Through a partnership of industry and ESD, new military capabilities can be provided to the combat forces—capabilities vital to implement national policy.

Minimum Wage Law Set for Service Contracts

The Service Contract Act of 1965 (McNamara-O'Hara Act), P.L. 89-286, will become effective on or about Jan. 22, 1966, and will be reflected in appropriate DOD service contracts thereafter.

In essence the law provides for payment of the Fair Labor Standards Act rate or, when so determined by the Secretary of Labor, the prevailing rate (including fringe benefits), whichever is greater, to employees working on a Government contract for services.

Contracts covered will be those in excess of $2,500, the principal purpose of which is to furnish services in the United States through the use of employees such as guards, watchmen, and any person engaged in a recognized trade or craft, or other skilled mechanical craft, or in unskilled, semi-skilled, or skilled manual labor occupations. Although the act clearly includes contracts for laundry, custodial, guard, food and miscellaneous housekeeping services, other service contracts may also be subject to it.

The overall scope of the act will be determined by regulations and interpretations of the Department of Labor which is charged with its administration and enforcement.

NORAD To Occupy New Underground Ops Center Jan. 1, 1966

The North American Air Defense Command (NORAD) plans to celebrate the new year by taking over its new combat operations center being built inside a mountain near Colorado Springs, Colo.

January 1 is the date set for initial operational capability of the underground aerospace defense command post and for NORAD to take over from the builders and developers.

The command's present combat operations center, hub of a continental network of detection and warning devices backed by defensive interceptor fighters and missiles, is an above-ground block structure at Ent AFB, Colo.

It will remain in operation at least until full operational capability of the facility inside the mountain is achieved.

In the caverns, 11 steel buildings, most of them three stories high, have been constructed, and all are mounted on huge springs to protect sensitive equipment against nuclear blasts.

The buildings will house the equipment to receive, process and display information on the air and space traffic picture over North America, and the people who will evaluate the findings and sound the first warning in case of attack.

Top 100 Defense Contractors FY 1965

The 100 companies which together with their subsidiaries received the largest dollar volume of military prime contracts of $10,000 or more in FY 1965 accounted for 68.9% of the United States total. This was 4.5 percentage points below the 73.4% obtained by the top 100 companies in FY 1964.

The FY 1965 decline in the 100 company percentage resulted mainly from a decrease of $1.6 billion in missile and aircraft contracts which generally are awarded to very large concerns, since they have the resources and know-how to undertake complex large scale projects. As a corollary of the reduction in aircraft and missile prime contracts, the percentage of all prime contracts awarded to small business increased from 18% in FY 1964 to 20.3% in FY 1965. Small business firms also obtained about 40% of the total amount of subcontracts placed by large concerns. Over the past 10 years large companies have subcontracted out approximately one-half of their defense work.

1. Lockheed Aircraft Corp.
2. General Dynamics Corp.
3. McDonnell Aircraft Corp.
4. General Electric Co.
5. North American Aviation, Inc.
6. United Aircraft Corp.
7. American Telephone & Telegraph Co.
8. The Boeing Co.
9. Grumman Aircraft Engineering Corp.
10. Sperry Rand Corp.
11. Martin-Marietta Corp.
12. Ford Motor Co.
13. General Tire & Rubber Co.
14. Raytheon Co.
15. Hughes Aircraft Co.
16. Ling-Temco-Vought, Inc.
17. Westinghouse Electric Corp.
18. Northrop Corp.
19. General Motors Corp.
20. Bendix Corp.
21. Avco Corp.
22. General Telephone & Electronics Corp.
23. Kaiser Industries Corp.
24. Radio Corp. of America
25. International Telephone & Telegraph Corp.
26. Todd Shipyards Corp.
27. Textron, Inc.
28. Litton Industries, Inc.
29. I.B.M. Corp.
30. Newport News Shipbuilding & Dry Dock Co.
31. Douglas Aircraft Co., Inc.
32. Standard Oil Co. (New Jersey)
33. Pan American World Airways, Inc.
34. Collins Radio Corp.
35. Thiokol Chemical Corp.
36. Texaco, Inc.
37. F M C Corp.
38. Massachusetts Institute of Technology.
39. Standard Oil Co. (California)
40. Hercules Powder Co.
41. General Precision Equipment Corp.
42. Socony Mobil Oil Co.
43. Goodyear Tire & Rubber Co.
44. Honeywell, Inc.
45. Ogden Corp.
46. Chrysler Corp.
47. T R W, Inc.
48. Aerospace Corp.
49. Continental Motors Corp.
50. Du Pont (E. I.) de Nemours & Co.
51. Republic Aviation Corp.
52. Signal Oil and Gas Co.
53. Magnavox Co.
54. Asiatic Petroleum Corp.
55. Western Union Telegraph Co.
56. Eastman Kodak Co.
57. Lear-Seigler, Inc.
58. Olin Mathieson Chemical Corp.
59. Curtiss-Wright Corp.
60. System Development Corp.
61. Johns Hopkins University
62. Bath Iron Works Corp.
63. Bethlehem Steel Corp.
64. Sverdrup & Parcel, Inc.
65. Morrison-Knudsen Co., Inc. Utah Construction & Mining Co. Perini Corp. and C. H. Leavell & Co.
66. Texas Instruments, Inc.
67. Gyrodyne Co. of America, Inc.
68. Continental Oil Co.
69. Control Data Corp.
70. Mitre Corp.
71. Vitro Corp. of America
72. International Harvester Co.
73. Union Carbide Corp.
74. Kaman Aircraft Corp.
75. Cutler-Hammer, Inc.
76. Standard Oil Co. (Indiana)
77. Norris-Thermador Corp.
78. Hayes International Corp.
79. Teledyne, Inc.
80. Stanford Research Institute
81. Burroughs Corp.
82. Gulf Oil Corp.
83. Cities Service Co.
84. Flying Tiger Line, Inc.
85. Richfield Oil Corp.
86. Firestone Tire & Rubber Co.
87. White Motor Corp.
88. Ryan Aeronautical Co.
89. Standard Kollsman Industries, Inc.
90. Atlantic Research Corp.
91. Motorola, Inc.
92. Condec Corp.
93. Chamberlain Corp.
94. Koppers Co., Inc.
95. Union Oil Co. of California.
96. Dynalectron Corp.
97. Rich (F.D.) Co., Inc.
98. Morrison-Knudsen Co., Inc.
99. Webb (Del E.) Corp.
100. Day & Zimmerman, Inc.

Army Announces Go-Ahead on New High Speed Helo

The U.S. Army has announced the go-ahead on development of 10 prototype high speed helicopters designed to fire a variety of weapons. They will be the first helicopters conceived and designed exclusively as weapons ships.

The Lockheed-California Company of Burbank, Calif., has been selected to develop the new vehicles.

Called the Advanced Aerial Fire Support System (AAFSS), the vehicle will be a radically new compound helicopter capable of cruising at speeds of more than 200 knots, 50 per cent faster than other operational Army helicopters. It will be twice as fast as armed helos now in action in South Vietnam.

The AAFSS was designed as an integral system, combining the aerial vehicle itself, avionics, weapons and ground support equipment. It will be powered by the new 3400 horsepower T-64–S4A gas turbine engine developed by the General Electric Company, Lynn, Mass., under a Navy contract.

Designed to replace the Army's present armed helicopters, which were adapted from troop carriers, the AAFSS will escort troop-carrying helicopters in air mobile operations and will provide suppressive fire in the landing zones.

A feature of the AAFSS is the use of Lockheed's advanced rigid rotor system which offers a highly maneuverable, as well as an extremely stable, platform at both high and low speeds and while hovering. The advanced helicopter will incorporate a thrusting pusher prop, short stubby wings and an anti-torque rotor in addition to the main rotor blades.

In battle, the AAFSS, with its two-man crew, will employ a variety of weapons including machine guns, grenade launchers, rockets and antitank missiles.

DSA Issues Sampling Guide

The Defense Supply Agency has published a handbook which provides basic information on sampling inspection principles, methods and procedures for personnel concerned with the utilization of an effective quality assurance technique.

The new guide, DOD Handbook H-53, "Guide for Sampling Inspection," June 30, 1965, supercedes Inspection Handbook H-105, "Administration of Sampling Procedures for Acceptance Inspection," April 27, 1954.

Copies may be obtained from the Commanding Officer, Naval Supply Depot, 5801 Tabor Ave., Philadelphia, Pa. 19120.

ABOUT PEOPLE

DEPARTMENT OF DEFENSE

Dr. Finn J. Larsen has been selected for appointment as Principal Deputy Director of Defense Research & Engineering. He succeeds Dr. E. G. Fubini, who served as Asst. Secretary of Defense (Deputy Director of Defense Research & Engineering) until last July. The position has since been redesignated Principal Deputy Director of Defense Research & Engineering.

Mr. Jack Moskowitz, former counsel for the U.S. Senate Sub-committee on Anti-Trust and Monopoly, was sworn in Nov. 24 as Deputy Assistant Secretary for Civil Rights and Industrial Relations in the Office of the Assistant Secretary of Defense (Manpower). He succeeds Stephen N. Shulman, now General Counsel for the Air Force.

Brig. Gen. Robert H. Herman, USAF, Commander, Defense Construction Supply Center (DCSC), Columbus, Ohio, will retire from active duty effective Jan. 31, 1966.

Brig. Gen. Jefferson J. Irvin, USA, has been designated Deputy Assistant Secretary of Defense (Reserve Affairs), Office of the Asst. Secretary of Defense (Manpower), succeeding Col. James F. Hallingsworth, USA, who has volunteered for duty in Vietnam.

Mr. Walter N. Morse has been appointed Counsel for the Defense Communications Agency. He succeeds John G. Gregg. Morse's appointment became effective Oct. 25.

DEPARTMENT OF THE ARMY

Brig. Gen. Charles W. Eifler, Deputy Commanding General, Land Combat Systems, U.S. Army Missile Command, Redstone Arsenal, Ala., will be promoted to the rank of major general and reassigned to duty in Vietnam. Gen. Eifler's replacement has not been named yet.

Col. Robert E. Kimball has been appointed Director of Army Research and Col. Edward B. Kitchens, Jr., has been named Chief, Air Mobility Div., Directorate of Developments, both in the Office of the Chief of Research and Development, U.S. Army.

Dr John C. Hayes has joined the staff of the U.S. Army Research Office, Arlington, Va., as Chief of the Programs and Concepts Branch, Scientific and Technical Information Div.

Appointment of Col. Joyce B. James as Director of Plans and Operations, Headquarters, Army Strategic Communications Command, Washington, D.C., has been announced.

Col. Kenneth B. Cooper is the new Director of the Army Engineer Reactors Group, Fort Belvoir, Va. He succeeds Col. Robert B. Burlin, selected for the National War College, Washington, D.C.

DEPARTMENT OF THE NAVY

RAdm. Alexander C. Husband has relieved RAdm. Peter Corradi as Chief of the Bureau of Yards and Docks and Chief of the Navy Civil Engineer Corps. Adm. Corradi, on being relieved, was retired from the service with 25 years active duty.

RAdm. Nathan Sonenshein has been assigned as Program Director, Fast Deployment Logistics Ship Project.

RAdm. Arthur R. Gralla has been assigned to the post of Deputy Chief of the Bureau of Weapons. He relieves RAdm. Earl R. Eastwold, who has been reassigned as Commander, Middle East Force.

RAdm. Edward J. Fahy has been designated Chief of the Bureau of Ships; RAdm. John J. Fee is the new Deputy Chief of the Bureau of Ships.

Marine Corps Brig. Gen. Arthur H. Adams, present Director of Information, Headquarters, U.S. Marine Corps, will be reassigned in March to the post of Commanding General, Marine Air Reserve Training Command, Glenview, Ill.

DEPARTMENT OF THE AIR FORCE

Maj. Gen. Richard L. Bohannon has been appointed as Surgeon General of the Air Force in the grade of lieutenant general.

Maj. Gen. John W. White, Commander, Air Force Special Weapons Center, Kirtland AFB, N.M., has announced plans to retire early in 1966. Col. Ralph S. Garman, formerly Commander, Air Force Missile Development Center, Holloman AFB, N.M., will take his place as Center commander.

Brig. Gen. William R. Yancey has been assigned as Vice Commander, Aeronautical Systems Div., Air Force Systems Command, Wright-Patterson AFB, Ohio.

Col. George W. Lutz has been assigned to the Directorate of Operations, Hq, USAF, as Chief of Test Operations AF Weapons Effectiveness Testing).

Lt. Col. Allan D. Read, Director of Information, USAF Tactical Air Warfare Center, Eglin AFB, Fla., has announced his decision to retire after 25 years service. Named to replace him is Maj. Bartholomew F. McCarthy.

Lt. Col. M. R. Richards has been named to head the AFSC Flight Dynamics Laboratory's new V/STOL Technology Division at Wright-Patterson AFB, Ohio.

Three Million Dollars in Residual Contract Property Distributed

Three million dollars worth of excess contract property no longer needed by Government contractors has been distributed by three Defense Contract Administration Services Regions (DCASR's) for reuse by the Department of Defense, Federal civil agencies and state institutions.

Reutilization and disposal of this residual property was achieved by DCASR headquarters in Philadelphia, Detroit and Dallas during a three-month period.

The excess property became available as a result of contracts being terminated prior to completion for such reasons as new designs and changing requirements, through reutilization possibilities of property which had served its purpose during performance of contract, and property left over at the end of a contract.

Property included raw materials, such as metals, plastics and lumber; equipment and machinery, such as fork lift trucks, warehouse moving and production machinery; and work-in-process, which might comprise anything from a partially made uniform to a sled for hauling military equipment in Alaska.

First priority for the materiel was given to the Department of Defense. Materiel left over after screening by DOD was offered to Federal civil agencies. The acquisition of materiel made available to state institutions was handled through the Department of Health, Education and Welfare and the General Services Administration. Institutions benefiting from the reutilization program included hospitals, colleges and welfare and research agencies.

The three DCASR's also sold a total of a quarter of a million dollars worth of usable property left over from the contracts to the public during the past fiscal quarter. This materiel was sold after no one claimed it for reutilization within the Government.

Contract property coming under the category of scrap and salvage brought an additional $168,000 through sale to the public. This resulted in a total of about $400,000 credited to contracts as a management effort in conserving appropriations.

(*Continued from Page 2*)

ventional warhead. The TOW will give U.S. infantry units for the first time an automatic antitank system wherein the gunner has only to keep his sight on the target and the missile will be automatically directed to the target. A significant key to the success of TOW will be in the greatly improved optical qualities of its sight, as well as the mechanical aspects of its mount. Due to these features, gunner training time as well as gunner selection time can be vastly reduced.

In this connection, one of our industry partners has recently developed an airborne sight for the TOW which will allow us to mount it on a helicopter. The airborne gunner can keep his cross-hair on his target while the helicopter undertakes maneuvering action.

In this same area we are developing a new main armament system for combat vehicles. It is called the Shillelagh, and incorporates guided missile capability with a very high probability of first shot hit and kill. Both the missile and the conventional round will be capable of being fired interchangeably from the same 152mm gun-launcher. Again, one of the key factors to the success of the system is its sighting unit. As with the TOW, Shillelagh has an automatic correction to target feature.

The Shillelagh system is proving to be most successful, and one which we expect to be capable of defeating any other known armored vehicle in the world.

As a follow-on to current guidance systems, we are working on systems which employ optics to sense reflected energy from the target area. What we would like to have is a system whereby natural contrasts are used as the key. Let's say we want to shoot at a tank. We are learning how to program into our missile's guidance brain an electronic-type map of what a tank will look like in relationship to its background. We tell it, "go find something that matches this signal!"

The missile speeds on its way toward the target—an onboard optical system scanning ahead. When it picks up the intended target a matching signal occurs and by electronic impulses the missile then guides itself to the mark. However, when the missile veers off course and a corrective signal causes a control action to bring it back on course, high internal inertial forces are set up. Therefore, light optics in the form of plastics are being considered. Such a guidance system as this has the big advantage over current wire-guided systems such as TOW of allowing the gunner to duck or to immediately engage a new target instead of remaining exposed and flying the missile all the way to the target.

Another new weapon which features an improved optical sight for fire control is the Redeye, a bazooka-like weapon being developed for use by one man for forward area air defense. The Redeye uses a missile with an infrared heat-seeking guidance unit in the nose. Good test results have been attained with Redeye against aerial targets at ranges in excess of two miles and at speeds in excess of 400 knots or about 450 MPH. Since this will be a weapon handled, aimed and fired by one man using only muscle power, a light but highly effective optical sight is crucial. The sight must allow the gunner to pick up his target rapidly, track it and eyeball in the estimated correct amount of lead.

These are all examples of the growing sophistication of modern fire control requirements.

Target Acquisition Requirements.

But all these advances and those which are being sought in weaponry will be of little value if we can't answer these four questions: Is a target there? (detection) What is it? (identification) Where is it? (location) How big is it? (description).

Part of the answer to this problem area rests with better night vision capability. One of the great changes in warfare which came about in the 20th century has been the growing use of night hours as a time for operations. One hundred years ago during the American Civil War major combat operations were confined to daylight hours; the periods of darkness were used for the most part as rest periods. But today there is an ever-increasing tendency, particularly among under-armed and insurgent forces, to fight at night. The principal reason is obvious; the increasing efficiency of modern weapons forces one to use darkness to neutralize or diminish the effectiveness of modern firepower. Of course, there is the additional motive which seems to be characteristic of 20th century life—there aren't enough hours in the normal day to do all we want to do. Modern war is no different.

As a result the Army has an urgent need to develop better night vision equipment. Ultimately, we would like to be able to operate in the field with near daylight efficiency—or in any event, with a considerable advantage over the enemy. To that end, the Army has been pushing the development of such devices, particularly passive types or image intensifiers. The great advantage of this approach over the infrared systems of World War II and the Korean War is that the image intensifier does not emit any electronic signal which is subject to detection, thereby rendering the user liable to positive countermeasures. These devices are capable of intensifying any available light many thousands of times.

However, there are many problems still to be overcome, not the least of which are weight, cost and durability. For example, the lens assembly alone for one type device weighs 14 pounds, a vast improvement over previous systems of similar performance with weight in excess of 60 pounds. In addition, the development cost for each of these assemblies was over $10,000 each, and in limited production quantities of approximately 100 units the cost is still more then $7,000 per lens. Ways must be found to lighten the weight and reduce cost.

Still other answers to the problem of finding and identifying targets rest with such sensory devices as acoustical, infrared imagery, ultraviolet, photography, radar, TV-type scanners and perhaps some facet of laser-optics. Currently, we are exploring means of improving the capabilities of all of these, since no one of them can do the job alone. Each has its strong points but each has its limitations as well. These limitations

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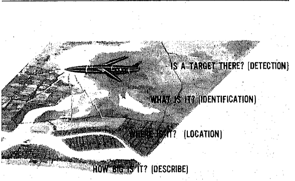

IS A TARGET THERE? (DETECTION)
WHAT IS IT? (IDENTIFICATION)
WHERE IS IT? (LOCATION)
HOW BIG IS IT? (DESCRIBE)

Equipment Readiness: an Achilles Heel

by

H. E. Witt, Deputy for Supply & Maintenance
Office of Asst. Secretary of the Air Force
(Installations & Logistics)

Changing patterns in Defense management is a theme that many individuals—in both industry and the Department of Defense—have had frequent opportunities to reflect upon in recent months. That management patterns are changing and will continue to change must be accepted, although many of us are reluctant to accept such changes. One area that is changing rapidly is defense readiness. This is significant because in our day-to-day operations we find that our efforts are channeled toward one basic objective—readiness.

Readiness is a part of everyone's life, but in the military logistics field it *is* our life. Readiness is not always understood, probably because it is such a broad subject and because there are so many vital factors involved in achieving a state of readiness. One highly acceptable definition of readiness is swift responsiveness to planned military needs and being able to respond with relative ease, the latter being a most important element.

There are several types of readiness that affect our military posture. Industrial readiness, operational readiness, materiel readiness and equipment readiness. While the military establishment and defense industry are vitally concerned with all categories, the area of equipment readiness is probably the most significant. Equipment readiness differs from the other types of readiness in that it is concerned with the condition of equipment, by type, on an inventory basis. This includes equipment in the hands of troops, so to speak, as well as the equipment in stock. Industrial readiness is concerned primarily with the production base, while materiel readiness is the availability of materiel required to equip and support our force levels for a specified time period in support of planned operations. Covering all of these, we have operational readiness, a composite overview, in a period in time, of the whole status or condition of combat forces. The measurement of this readiness is concerned with many elements, such as personnel, training, supply, maintenance and many others.

To set the stage, it is important to briefly recall the background of increased attention to equipment readiness. In the late 1930's, our standing military force was in the order of 200,000 to 300,000 men. The battleship was a most dreaded weapon. The top speed of our inventory of 1,000 aircraft was about 200 miles per hour. Great reliance was placed on our general philosophy of national security, which was that, if need be, we could mobilize people and industry within a year or two and meet any challenges.

Thirty years and several wars later, we find that this philosophy has undergone a major change, a change that has brought with it a new world of problems to be solved. The standing forces now number more than two and one-half million people, with an arsenal of weapons and equipment valued at more than $100 billion. The top speed of our inventory of 30,000 aircraft exceeds 2,000 miles per hour, while missiles, a new family of weapons, travel at speeds up to 18,000 miles per hour.

The safety historically afforded by the two oceans has now turned to a source of threat from submarine launched missiles. Mobilization time has been reduced from years or months to days and hours or, in extreme instances, perhaps only minutes.

The major factor influencing the change since World War II has been the development and application of new technology to evolve more powerful and more accurate and longer range equipment for delivery of our payloads. The collapse of time to mobilize is the basis for the vital need of being in a continued state of mobilization, and requires that we achieve the capability for rapid response to maximize our military advantage. This, coupled with the growing mechanization of forces and greater dependence on equipment to wage modern warfare, creates a situation wherein military mission success, and perhaps national survival, depend heavily on continued equipment readiness. As a result, attention to readiness has become increasingly prevalent in the Office of the Secretary of Defense and throughout the Military Departments.

One illustration of the concern connected with equipment readiness can be provided through Secretary McNamara's establishment of the position of Deputy Assistant Secretary of Defense (Equipment Maintenance and Readiness). This action, which was effected several years ago, was followed by the formation of the Defense Equipment Maintenance and Readiness Council. This council, chaired by the new Deputy Assistant Secretary, functions as an advisory body to the top officials of the Defense Department. Membership consists of senior military and civilian representatives of the Military Services, the JCS staff, the Defense Supply Agency and the Office of the Secretary of Defense. Maintenance and supply functions are both represented. The council has been an effective instrument for improving communications and exchanging ideas in dealing with Defense-wide equipment support, policy and procedural matters. On a number of occasions, industry has been invited to participate in the council studies. One major task undertaken by this group was the development of a uniform system of equipment readiness reporting. While the initial effort by the Services covered only aircraft, revisions to this system have occurred which now encompass other equipment besides aircraft. As this report is expanded in scope, an improvement in the quality of the information received has occurred.

It is hard to dispute the fact that instant readiness is the key to mission effectiveness—and maintenance is the key to equipment readiness. To go back to my definition of readiness—prompt response, speed in accomplishment of the task and the ease in which it is accomplished—only through good maintenance can we be responsible and accomplish the task with reasonable speed. Unfortunately, in many cases, this is not easy. For our future systems, the key is going to be in designing maintainability into equipment.

For years maintainability has been traded off for operational needs. Today the requirement to actually design ease of maintenance is coming to the forefront and tomorrow, with still more complexity built into our systems, further tradeoffs in favor of maintainability can be expected. The many instances where equipment must be torn down almost completely so that the maintenance man can perform a relatively small job are common knowledge. This cannot be afforded in the future.

Along with maintainability, there is a need for greater emphasis on quality and reliability. Recognizing the growing importance of this aspect of the materiel field, the Department of Defense has clearly stated that the parameters of this subject will be closely examined. This will be accomplished thru the media of an in-house conference of over 100 representatives from OSD, DSA and the Military Departments. The objectives of this conference are to analyze the principal quality and reliability problems that confront the DOD, to assess pertinent current efforts and propose plans which are aimed at solving these problems. In addition, long range programs will be recommended to improve quality and reliability assurance efforts. In retrospect, it is more appropriate to say that the key to tomorrow's equipment readiness is design, quality and reliability.

(Continued on Page 12)

NOTES FOR EDITORS

Briefed below are some events and projects within the Department of Defense which may be of interest to writers and editors. If further information on any of these topics is desired, please write to Chief, Magazine and Book Branch, Office of Assistant Secretary of Defense (Public Affairs), Washington, D.C. 20301

AIR-INFLATED STRUCTURE SLATED TO HOUSE TEST FACILITY

One of the largest air-inflated structures in the world will be used to house and provide weather protection for a unique test facility at the Army's Fort Belvoir, Va. The pneumatic bubble, 210 feet in diameter and 105 feet high, comparable to a 10-story building, will house a facility in which the electromatic environment generated by nuclear explosions will be simulated in order to determine effects on military equipment and systems.

The hemispherical, air-supported structure, fabricated from vinyl-coated nylon, will have an inner liner for thermal insulation. Integral blowers and heaters will maintain positive pressure inside the structure and comfortable temperatures during the winter months. It will also have an automatic pressure-regulating control system and emergency power generating equipment. Equipment will be taken in and out of the structure through a 24-foot long airlock having doors 10 feet wide and 12 feet high. For items larger than the airlock, the structure can be deflated and opened to permit entrance or exit.

The air-supported structure was chosen over a conventional building because it is relatively transparent to electromagnetic signals and will provide minimum reflection while providing weather protection for personnel and equipment.

BATTLE TO SAVE GREEN SEA TURTLE IN FIFTH YEAR

For the fifth consecutive year Navy turtle toters have transported newly hatched green sea turtles from the shores of Costa Rica to areas of the Caribbean where they are no longer abundant. Operation Green Turtle, a cooperative effort of the Navy, the Caribbean Conservation Corporation, the National Science Foundation and the University of Florida, is designed to replenish the Caribbean's supply of big turtles and to study their habits.

When female green turtles reach maturity, between the ages of five and seven years, they return to their place of birth and lay eggs. They return to the same location every three years thereafter, laying three to five litters of about 100 eggs each. The turtle experts hope that the transplanted babies have bad memories and will return to the areas where they were transplanted.

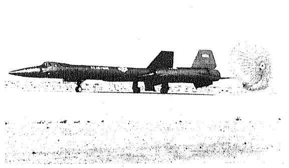
The green sea turtle is an excellent source of meat and for that reason was slaughtered indiscriminately by early settlers of America. Recent sightings of the amphibians near Caribbean land areas where none have been seen for more than 100 years indicate that the operation is making some progress. Near the mouth of Costa Rica's Tortuguero River, green sea turtles have been coming ashore to lay eggs in increasing numbers each year.

DARK, HEAT REFLECTING PAINT DEVELOPED FOR MISSILES

The development of a dark, heat reflecting paint by the Army's Aberdeen Proving Ground, Md., could produce color changes in the home building and automotive industries of America. The breakthrough in what was long considered "a nearly impossible" search is the result of a year's intensive research for a dark camouflage paint for Army missiles. The white paint now being used on Army missiles does reflect heat and helps protect the temperature-sensitive components inside, but it also makes them easy to detect from the ground and air.

Potential uses of the paint are not limited to missiles. Army instrument trailers and vans which require air conditioning would be easier to cool if coated with the new paint, tests indicate. Durability of the paint under heat and rapid temperature changes remains to be determined.

Aberdeen scientists said that it shows a good degree of infrared reflectance. They also said that the paint formula may be applicable to other colors as well as olive drab, the color used in the development.



Five U.S. Air Force officers have set nine world speed and altitude records with the YF-12A supersonic interceptor and won Distinguished Flying Crosses. The jet class speed records included a world record of 1,643.041 miles per hour for the 500-kilometer closed course, 2070.101 miles per hour for a straight course speed record and 80,257.86 feet for an absolute sustained altitude record.

Managerial Skills Honed at Defense Weapon Systems Management Center

by
Col. John F. Harris, USAF
Commandant, Defense Weapon Systems Maungement Center

The establishment of a training center for system project management was formalized by the Department of Defense in DOD Directive 5160.55 signed by Deputy Secretary of Defense Cyrus R. Vance on October 26, 1965. The order provides for a centralized activity to train selected military and civilian personnel of all DOD components in the effective management of programs concerned with the development, acquisition and integrated logistic support of weapon and support systems.

Responsibility for establishment and operation of the Defense Weapon Systems Management Center (DWSMC) is assigned to the Air Force, under the administrative and command authority of the Air University and the Air Force Institute of Technology. The center is located at Wright-Patterson Air Force Base, near Dayton, Ohio, and has been in operation since September 1964.

The primary mission of the center is to stress the identification and solution of typical system/project management problems, and maintain a close relationship between actual problems and the curriculum. This training is intended to enhance the student's ability to understand the project specialists with whom he will interface; to recognize special interests or biases of in-house or contractor personnel when analyzing problems; and to ascertain and assemble the facts necessary for making correct and timely decisions. In addition to its 11-week resident course, offered each quarter, the center serves as a focal point for interchange of concepts, ideas and techniques among the three Military Services, Office of the Secretary of Defense (OSD) and the defense-industry complex. DWSMC objectives support an approach to commonality of systems management terms and project practices that will contribute significantly to facilitating industry's application of its responsibilities in national defense. Providing continued research and identification of weapon systems management concepts, doctrine and techniques is a vital part of the program.

The Defense Weapon Systems Management Center traces its concept to the Department of Defense Conference on Program Management held in April 1963, at New London, Conn. After reviewing the final report of the conference, Mr. Roswell Gilpatric, then Deputy Secretary of Defense, stated: "One task which becomes evident is the accumulation of a cadre of officer and civilian personnel adequately trained to manage our major weapons programs. A central training establishment and a curriculum which covers the broad skills required should be planned and implemented at an early date. This conference convincingly demonstrated that the essential problems and skills are common to all weapons managers irrespective of Service."

Although operated by the Air Force, the center's prime objective remains to maximize its service to all of the Military Departments. Faculty members are commissioned officers of the Army, Navy and Air Force, and are selected for their academic background and their managerial skills acquired from recent experience in systems development and acquisition management.

DWSMC is provided OSD policy guidance by the Director of Defense Research and Engineering (DDR&E), and maintains liaison with the Defense Logistics Management Training Board. A Joint Advisory Group, composed of the Commanding General, Army Materiel Command; the Chief of Naval Material; and the Commander, Air Force Systems Command, will review DWSMC operations and effectiveness in terms of users' requirements. This group will also recommend and coordinate changes in policies and standards and will be responsible for assuring continuing support to the center in all matters of user interest. DWSMC, as part of its evaluation process, invites OSD and Joint Advisory Group observers to all of its resident classes.

The resident academic program of the center utilizes lectures, seminars, case studies and exercises. Subject matter is presented by resident faculty members and by visiting lecturers representing line and functional specialties involved in system/project management. An important faculty contribution to the center is made by the Ohio State University Research Foundation. Heads of major military commands and high level DOD speakers contribute their time and thoughts in presentations and lectures on appropriate occasions.

The DWSMC curriculum is divided into three basic time-oriented phases, preceded by a background or introductory period and followed by a simulation exercise which brings into play all of the curriculum material. In the preparation of the curriculum, the life-cycle approach in the arrangement of the subject material was employed. Chronologically relating the subject material and problems in the order in which a system/project manager would most likely encounter them gives more realism to the course of instruction.

The first three weeks of the course are devoted to background material and to providing the student a basic understanding of the tools and techniques required before starting consideration of the life-cycle of weapon system/project acquisition. Some of the topics are listed below:

- Why Project Management?
- The System Acquisition Process.
- OSD Organization and Mission.
- Project Management Philosophy —Army, Navy and Air Force.
- The Defense Industry Complex.
- The Budget Process.
- The Hitch Program Package.
- Cost Estimating and Cost Analysis.
- Management Information Systems.
- Management Uses of Computers.
- Reporting.
- Time and Cost Controls.
- PERT/Cost.
- DOD Cost Reduction Program.
- Procurement of Technical Data.
- Contractor Performance Evaluation.

The fourth week is used to treat activities which occur during Concept Formulation. Topics include:

- Requirements—National Resources.
- Requirements—JCS.
- Requirements—Service and User.
- Service Criteria for Project Establishment.
- Organizing for Project Management.
- Manpower and Staffing.
- Technical Development Plans.
- Prerequisites to Contract Definition.
- Concept Formulation Case Studies.

The fifth and sixth weeks are used to discuss the events and problems which face the system/project manager during Contract Definition. Topics covered in this period include:

- Contract Definition Activities.
- Contracting in Contract Definition.
- Functional System Analysis.
- System Specifications.
- Multiple Incentives.
- PERT Exercise.
- Integrated Logistic Support.
- Support Planning.
- Source Selection.

- Proposal and Price Evaluation.
- Negotiation.
- Contract Definition, A Case Study.
- DDR&E Management of Research, Development, Test & Evaluation.

The material presented up to this point pertains to those activities required prior to a final decision to proceed with Engineering Development or Operational Systems Development. This is commonly referred to as the Acquisition Phase and is covered in the next four weeks of the course. DWSMC Acquisition subjects include:

- Systems Engineering.
- Configuration Management.
- Reliability and Maintainability.
- Technical Problem Analysis.
- Test Program Management.
- System/Project Management in Industry, A Case Study.
- Financial Management in a Project Office.
- Human Engineering.
- Training Requirements.
- Military Construction.
- Production Planning.
- Initial Weapon System Support.
- Logistics Cases, Math Models.
- Technical Publications.
- Provisioning.
- The Defense Supply Agency.
- Field Contract Administration.
- Quality Assurance.
- Impact of Changes.
- Production Contracting.
- Value Engineering.
- Production, Case Studies.
- The Total Package Concept.
- Logistics Support.
- Logistics Exercise.

The final week of the course is used to present a computerized management game embodying all the principles discussed during the entire course. Students are divided into teams which act as system/project offices. The object of the simulation is to field a weapon system to meet a Specific Operational Requirement, optimizing cost, schedule and performance. Sufficient background information is furnished to enable the teams to apply lessons learned during the course. Using a series of decision points, the exercise emphasizes the continuity of the manager's analysis and decision role, and the impact of his decisions on the cost, performance and schedule of his project. The exercise terminates with team presentations outlining the team approach, problems encountered, lessons learned and any other points of interest.

DWSMC accepts students from all branches of the Military Services and other Government agencies, such as NASA, the National Security Agency, Defense Communications Agency, Defense Supply Agency and the Federal Aviation Agency. Also, the DOD directive permits attendance by personnel from the defense industries. The larger portion of the 60 student spaces is shared equally by the three Military Departments. Student rosters to date include individuals assigned or enroute to system/projects such as Saturn, Polaris, Gemini, Omega, Nike X, General Purpose Vehicles, Pershing, Minuteman, ABRES, Hercules, AIMS, Sheridan, Tartar and many others.

Criteria for nomination of students are the same for Government and industry. Students must be currently assigned or have a forecasted assignment at the senior level in management of a major system/project. Students should have a baccalaureate degree in scientific, administrative or industrial specialities. Student grade levels are lieutenant colonel, commander, GS-14, or above. A security clearance of Secret is required.

Nominations for industry participation are handled by the Council of Defense and Space Industry Associations (CODSIA), located at 1725 De-Sales Street, NW, Washington, D.C., 20036. Member industries should forward their requests through the appropriate association to Mr. Franz H. Ohlson, Jr., Executive Secretary of CODSIA. Industry spaces are available for Class 66-B, which will convene April 11, 1966.

The center's program to provide the Defense Department with specially selected and equipped managers competent to handle the complex problems of systems acquisition is well on its way. The products of past and future classes of the center will do much to provide managerial skills comparable to the importance of the weapon systems they are fielding. This highly trained corps of management experts will not only contribute to the DOD role in national defense, but to the defense industry effort as well.

DEFENSE PRIME CONTRACT AWARDS TO SMALL BUSINESS

(Amounts in Thousands)

	July-Sept. 1965	July-Sept. 1964
Procurement from All Firms	7,495.4	6,507.4
Procurement from Small Business Firms	1,474.3	1,268.7
Per Cent Small Business	19.7	19.5

The Army's Accent on Seeing

(*Continued from Page 8*)

may be occasioned by size and weight, range and by weather factors such as rain, fog, mist and cloud cover and resolution.

Of the various sensory devices, optical components are a key part in the infrared and photographic approaches, and the use of optical radars is being explored. Tremendous advances have been made in recent years in developing new photographic optics.

The Army is also undertaking research on lasers, which may find application in optical radars, in communications links, in computers and in battlefield illumination. Special optical problems are involved because of the extreme brightness and power of the laser as an optical source which tend to degrade the glass in optical components used with this source.

In this connection, the Army is undertaking research in the fascinating field of fiber optics. Fiber optics are very high aperture light conduits that find useful application in transferring images from one point to another over otherwise difficult optical paths. For example, in surgical work as an inspection device. Another example is the use in transfering an image on a cathode ray tube to subsequent optical equipment without the size and length requirements of normal optical devices. Unfortunately, end fibers currently become optically joined, with the result that in high resolution devices streaks appear along the length of the fiber. We are hopeful we can eliminate this end fusing.

Despite all these problems, the Army feels confident that today and tomorrow will see industry ready and able to meet and solve our demands.

Equipment Readiness

(*Continued from Page 9*)

Maintenance then follows to maintain the quality and reliability of the system. All of these important factors are interrelated and complement one another, leading toward greater ease in achieving equipment readiness.

The Department of Defense believes in placing the emphasis on preventing ills rather than treating them. The end result will be quick responsiveness with ease. Equipment readiness is more important today because mission success and national survival depend on it; it's difficult to maintain readiness in today's complex systems without first designing serviceability into the equipment. Greater emphasis on quality and reliability is a must if we are to improve overall readiness effort. Preparedness is one integral part of the defense effort. Without conscientious action to expand reliability and to assure continued high standards of quality, equipment readiness could be our Achilles heel.

SPEAKERS CALENDAR

OFFICE OF THE SECRETARY OF DEFENSE

Maj. Gen. W. S. Steele, USAF, Dep. ommandant, Industrial College of the rmed Forces, at Armed Forces Man-ement Assn. Jacksonville Chapter, cksonville Naval Air Station, Jack-nville, Fla., Feb. 17.

ARMY

Maj. Gen. John J. Tolson, Command-g General, Army Aviation Center, rt Rucker, Ala.; Brig. Gen. George Seneff, Jr., Director of Army Avia-n, Office of Assistant Chief of Staff r Force Development; Brig Gen. ward F. Schiltz, Commanding Gen-al, Army Aviation Material Com-nd, St. Louis, Mo.; and Brig. Gen. urston T. Paul, Assistant Deputy ief of Staff for Logistics (Materiel adiness) at the National Aerospace rvices Assn. Eighth Annual Army iation Contract Services Symposi-, Statler Hilton Hotel, Washington, C., Jan. 17.

Lt. Gen Ben Harrell, Commanding General, Army Combat Developments Command, Fort Belvoir, Va., at AUSA Target Acquisition & Surveillance Symposium, Fort Huachuca, Ariz., Jan. 25; at Armed Forces Communications Electronics Assn. Meeting, Fort Monmouth, N.J., April 6.

Brig Gen. George B. Pickett, Jr., Chief of Staff, Army Combat Developments Command, Fort Belvoir, Va., at Eighth Joint Industry-Military-Government Packaging, Materials Handling and Transportation Symposium, Washington, D.C., March 2.

NAVY

VAdm. Fitzhugh Lee, Commandant, National War College, at U.S. Power Boat Squadrons, Miami Beach, Fla., Jan. 21.

Hon. Paul H. Nitze, Secretary of the Navy, at Joint Meeting of Industrial College of the Armed Forces and National War College, Norfolk, Va., Jan. 25.

RAdm. Eugene P. Wilkinson, Dir., Submarine Warfare Div., Office of Chief of Naval Operations, at 1966 Winter Convention of the Institute of Electrical & Electronics Engineers, Los Angeles, Calif., Feb. 2.

AIR FORCE

Hon. Harold Brown, Secretary of the Air Force, at Joint Meeting of Industrial College of the Armed Forces and National War College, Washington, D.C., Jan. 12; at Air Force Assn. Convention, Dallas, Tex., March 24-25.

Gen. J. P. McConnell, Chief of Staff, at National Security Industrial Assn. Meeting, Los Angeles, Calif., Jan. 13; at Joint Meeting of Industrial College of the Armed Forces and National War College, Washington, D.C., Jan. 31; at Air Force Assn. Convention, Dallas, Tex., March 24-25.

Miniature Radia Gear To Be Tested by AF

The Air Force is planning to test crominiaturized radio equipment r possible application in communitions services.

The equipment, in some cases one-nth the size of that now in use, is mpact, lightweight and portable. cause of its size, it has a small rrent drain and can be battery wered for a number of hours witht outside electrical source.

A short, 20-mile test shot will be de along a point-to-point, line-of-ht link between the Air Force mmunications Service-operated sites Dannenfels and Bann near Ramin AFB in West Germany.

A longer, 36-mile test shot will also made between Dannenfels and ndsey AFB at Wiesbaden, Germany.

Both links will be required to sup-rt 120 voice circuits while operating the 2,000 megacycle band. Channels ll be tested to determine frequency sponse, distortion, idle channel ise, stability and other factors.

The Air Force Communications rvice, headquartered at Scott AFB, ., and the Ground Electronics Engiering and Installation Agency, of Air Force Logistics Command, ll conduct the six-month tests.

Defense Contractors Will Exhibit at Advanced Planning Briefings

Industry know-how in cutting Defense costs will be illustrated in five cities at exhibits scheduled for March and April 1966 in conjunction with five regional unclassified Advanced Planning Briefings for Industry. The exhibits and briefings are being jointly sponsored by the Department of Defense and the National Security Industrial Association.

The five locales are: Boston, March 3–4; Atlanta, March 9–10; St. Louis, March 16–17; San Francisco, April 12–13; and Washington, D.C. April 27–28.

The 70 exhibitors are major Defense contractors who have pledged an organized, systematic, intensive effort to institute efficiencies that will give the Defense Department increased value for its dollar. Three hundred and fifty examples of these efficiencies will be displayed at each exhibit. The exhibitors are all participants in the Defense Contractor Cost Reduction Program, which was established by the Department of Defense and industry in response to President Lyndon B. Johnson's request of Dec. 2, 1963, for "an affirmative program of cost reduction in the performance of Defense contracts." Guidelines for the program were issued May 15, 1964. The guidelines apply to contractors having an annual volume of Defense sales in excess of $5,000,000 exclusive of firm, fixed-price contracts. Certain other contractors specifically designed by DOD also are included in the program.

A contractor performance in reducing cost under this program is evaluated by DOD. The evaluation is used by the Department when making source selections and when determining profit and fee rates on negotiating contracts where cost analyses are obtained.

The exhibits are intended to provide a cross-fertilization of cost reduction ideas among contractors, to promote cost consciousness and to stimulate additional contributions by personnel in Government and industry.

A representative cross-section of the more than 1,000 ideas to be displayed at all five exhibits will be selected by the Department of Defense for use in cost reduction training aids.

Companies participating in the exhibits held during the series of Adadvanced Planning Briefings for Industry conducted last spring received commendatory letters from President Johnson.

The Navy Resale System

by
RAdm. Charles A. Blick, SC, USN
Commanding Officer, U.S. Navy Ship's Store Office

The Navy Resale System is a worldwide, multi-million dollar merchandising business. The Navy Ship's Store Office, Brooklyn, N.Y., which directs it as a field office of the Bureau of Supplies and Accounts, is a dynamic, flexible and responsive organization, alert to apply progressive management, merchandising and financial principles and to respond to the needs of the Navy ashore and afloat.

The system and the Navy Ship's Store Office (NSSO) are relative newcomers to the Navy, having been established in 1946 after a thorough study of all Navy resale activities by a special committee appointed by the Secretary of the Navy.

The Navy Resale System comprises four separate programs: Navy exchanges, commissary stores, ship's stores afloat and Military Sea Transportation Service (MSTS) exchanges. For FY 1965 it was a $684 million business. The 166 Navy exchanges had annual sales of $413.8 millions. The 89 commissaries produced sales of $217 million. Ship's stores afloat with some 675 shipboard stores had annual sales of over $50 million, excluding sales of $5.6 million in clothing and small stores which are sold at cost. Rounding out the system are the Military Sea Transportation exchanges with $3.2 million annual sales.

Two of these programs—Navy and MSTS exchanges—are operated with nonappropriated funds, i.e., funds which have been generated from exchange operations rather than having been appropriated by Congress. However, the Government does provide facilities to house these activities and absorbs the payroll expense of military personnel assigned to exchanges. Government bottoms are also provided for shipments overseas.

Commissary stores and ship's stores afloat are operated with appropriated funds. Commissary stores, unlike the other three programs, are not operated for profit. However, they are required to operate on a self-sustaining basis with respect to: repaying the Government for the procurement cost of all merchandise sold; cost of all commercial transportation in the United States; maintenance of operating equipment and supplies; cost of utilities furnished to stateside stores; and inventory shortages due to shrinkage, spoilage and pilferage. There is also an assessment of 1% of sales for a reserve to defray the cost of new replacement equipment, refurbishments and capital improvements to commissary stores. Ship's stores afloat profits are limited to 15% on cost and, for the past several years, have averaged 11%.

The overall purpose of the Navy Resale System is to provide authorized patrons—broadly speaking, service personnel and their dependents—with quality merchandise and services at reasonable prices. By offering attractive, convenient, well-managed facilities, the Navy Resale System contributes materially to the morale of the men and women in the naval service. It provides a central hub for station community life and access to those items which makes life pleasant for shipboard personnel. It promotes through its generated profits (except commissary stores) a Navy-wide recreation program. It makes service life more pleasant, more neighborly and greatly contributes to the overall welfare of naval personnel and their dependents.

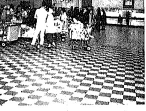
The recreation program consists of athletic programs, hobby shops, libraries, bowling alleys, movies afloat and other recreational activities. The profits from these resale activities represent a saving for the American taxpayer since at one time taxes paid for the program of leisure time activities of military personnel. Without the profits from Navy resale operations it would be necessary to appropriate approximately $26 million a year in order to assure continuance of Navy Recreation Programs.

Navy Exchanges.

Navy exchanges have no exact commercial counterparts because they cover a broader range of activities than the typical variety or department store. Exchanges not only sell candy, cigarettes, toiletries, clothing and other accessories, they are also engaged in a wide variety of service-type operations. These include cafeterias and snack bars, gas stations, barber shops and beauty parlors, laundries and dry cleaning plants, enlisted men's clubs and many other operations of a service nature.

The commodities which the Navy exchanges in the continental United States may sell are prescribed by the Armed Services Exchange Regulations. These regulations were originally issued in 1949 as a result of Congressional hearings on the subject of exchange sales and are applicable to all the Military Services. In addition to establishing the categories of merchandise authorized for sale, numerous cost price limitations were also prescribed. In general, the authorized list consists of the basic essentials of toiletries, candy, tobacco, stationery, underwear, plus reasonably low-priced semi-luxury items. The needs of personnel at overseas stations are such as to necessitate an expanded range of commodities, and authorized stock at overseas exchanges includes major appliances, additional items of clothing and a limited range of foreign manufactured goods. In addition, there are facilities for personnel to specially order a wide range of many other products available from United States sources, and not generally carried in stock by exchanges.

Experience has indicated that Resale System customers



Navy commissary store at the U.S. Naval Training Center, Great Lakes, Ill.

prefer merchandise which is nationally advertised and nationally distributed. However, exchanges may purchase and sell any authorized item from any source if the activity considers that the product represents good, competitive value, and that there would be sufficient patron demand to warrant investment in inventory.

To provide exchanges with the most popular brands of merchandise in the best selection, and in adequate price range, negotiations are conducted with manufacturers for the supply of their products. In accordance with retailing practices, negotiations include regular discount terms, packaging, etc. Suppliers are required to stipulate that the prices quoted are as low as any offered other purchasers. Merchandise, other than uniforms and accessories, is not required to be manufactured to specification; it is the regular lines and brands sold to commercial retailers.

Buyers and specialists at the Navy Ship's Stores Office continuously research markets and compare values seeking the best for customers. Their selections are further reviewed by a Merchandise Council composed of senior personnel in the office. In addition to visiting the markets, these buyers and specialists are available on Monday, Wednesday and Friday mornings to interview sales representatives and review their lines. Advance appointments are desirable and samples of products are required. In addition, the representative should be able to supply the following information:

- Special features of items; advantages over similar items available.
- Competitive price range.
- Sales response in exchanges.
- Minimum order and delivery time.
- Price information and terms.
- Standard packing and shipping specifications.

Following acceptance by the Merchandise Council, Price Agreement Bulletins and Merchandise Voces are issued to exchanges for use and guidance in selecting and procuring merchandise. Basic staple year-round merchandise is listed on Price Agreement Bulletins. Seasonal merchandise, such as clothing, shoes, etc., is listed on Merchandise Voces. However, the absence of a listing does not preclude any exchange from buying and stocking acceptable values of quality merchandise. In the case of overseas exchanges, all seasonal style merchandise for men, women and children is purchased by NSSO buyers based on inventory and sales information provided by each exchange.

Exchange officers and their procurement personnel have been instructed to extend courteous, considerate and impartial treatment to vendors and their representatives; however, appointments should be made in advance. Naturally, the answer to every salesman cannot be "yes." Among the reasons for possible rejection are: budget for department presently obligated; no evidence of customer demand (exchanges have a Want Slip system); price and quality not deemed equivalent to competitive products; item not authorized for resale; delivery period is excessive; and marketability has not been established, either commercially or in other exchanges.

MSTS Exchanges.

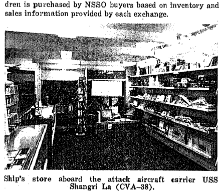
Each year, large numbers of military personnel are required to cross the oceans as a result of changes in duty assignments. This relocation not only concerns the individual directly in the Service, but often includes his dependents. The Military Sea Transportation Service is the single service manager for sea transportation and is responsible for transporting passengers and cargo for all agencies of the Department of Defense.

Sixty-odd MSTS vessels operate location exchanges aboard ship. Located at ports from which these vessels operate are the four "mother" shore-based exchanges—COMSTS Atlantic Area, COMSTS Gulf-Sub Area, COMSTS Pacific Area and COMSTS Far East Area. The shore-based exchanges located in Brooklyn, New Orleans, San Francisco and Yokohama, Japan, function as warehouses. These exchanges procure, receive, mark, store and issue the stock items required by location exchanges but do not engage in any resale activity.

Included within the authorized retail merchandise are items such as tobacco products, candy, toiletries, children's and infants' apparel and basic items of women's wear. Service activities may include barber shops, soda fountains and vending machines. The quantity and variety of stock taken aboard and services rendered are dependent upon the duration of the voyage and the number of people to be transported, giving due consideration to the composition of the embarked passengers and crew.

The general merchandising policies and principles that apply to Navy exchanges are also used by MSTS exchanges. They use the Price Agreement Bulletins and Merchandise Voces for sources and for guidance. Like Navy exchanges, they procure from other sources on the same

(Continued on Page 24)



Ship's store aboard the attack aircraft carrier USS Shangri La (CVA-38).

U.S. Marine Corps post exchange.

New Civil Works Authorizations Listed by U.S. Army Corps of Engineers

President Johnson has signed a new bill authorizing the participation of the U.S. Army Corps of Engineers in 150 civil works projects during 1965 which will cost an estimated $1,985,785,000.

Called the Omnibus Rivers, Harbors and Flood Control Act, the bill calls for 91 flood control projects, 50 navigation projects and nine beach erosion projects. The act also authorizes 33 surveys for flood control and 18 surveys in the interest of navigation and beach erosion control.

Following is a list, by state, of authorized projects which will receive Federal contribution of funds. Initials before the projects indicate N (navigation), FC (flood control), BE (beach erosion control), MP (multiple purpose) and HFC (hurricane flood control):

(CODE: 1. Location. 2. Description of project. 3. Dollar amount of Federal cost.)

ALABAMA

Bayou La Batre. (N) Channel deepening & widening. $262,000.

Perdido Pass. (N) Channel deepening & widening. $625,000.

ARIZONA

Indian Bend Wash. (FC) Levees & channel improvements. $7,250,000.

Phoenix. (FC) Dams, diversion channels & channel improvements. $58,810,000.

Santa Rosa Wash. (MP) Tat Momolikot Reservoir. $6,430,000.

Winslow. (FC) Levees & channel improvements. $2,775,000.

ARKANSAS

Lee Creek. (MP) Pine Mountain Reservoir. $10,000,000.

Little Rock Levees. (FC) Pumping plants. $363,000.

St. Francis Drainage Levee, Dist. 7. (FC) Channel improvements & gated water control structure. $1,372,000.

CALIFORNIA

Bodega Bay. (N) Breakwater; small boat harbor. $853,000.

Crescent City. (N) Deepen harbor basin; extend breakwater. $1,980,000.

Port San Luis. (N) Breakwaters; small boat harbor. $6,360,000.

San Francisco Bay to Stockton. (N) Channel deepening & widening. $46,853,000.

Eel River. (FC) Channel improvements; waterway easement; recreational facilities. $13,732,000.

Lytle & Warm Creeks. (FC) Channel improvements & levees. $9,750,000.

Napa River. (FC) Channel & recreational improvements. $14,950,000.

San Diego River. (FC) Channel improvements. $14,600,000.

Scotts Creek. (MP) Lakeport Reservoir & channel improvements. $9,300,000.

Sonoma Creek. (FC) Channel improvements & levees. $9,400,000.

Tahquitz Creek. (FC) Debris basin & channel improvements. $3,442,000.

Yuba River, Bullards Bar. (FC) Federal contribution for flood control. $8,979,000.

COLORADO

Arkansas River at Las Animas. (FC) Channel improvements. $1,541,000.

Trinidad Dam. (FC) Deletion of local cash contribution. $372,900.

CONNECTICUT

Housatonic River. (FC) Channel improvements, levees, floodwall & pumping plant. $5,100,000.

Stratford. (HFC) Levees, walls & pumping plant. $4,340,909.

FLORIDA

Duval County. (BE) Shore protection. $2,266,000.

Broward County. (N & BE) Jetties, channel improvement & beach nourishment. $1,093,000.

East Pass Channel. (N) Jetties & channel improvements. $1,151,000.

Fort Pierce. (BE) Beach restoration & nourishment. $220,000.

Jacksonville Harbor. (N) Channel deepening & widening. $8,484,000.

Ponce de Leon Inlet. (N) Channel improvements & jetties. $1,104,000.

Biscayne Bay. (HFC) Hurricane tidal barrier. $1,954,000.

Hendry County central & southern Florida project. (FC) Flood control & drainage improvements. $4,986,000.

Phillippi Creek. (FC) Channel improvements. $4,592,000.

Southwest Dade County central & southern Florida project. (FC) Flood control & drainage improvements. $4,903,000.

GEORGIA

Savannah Harbor. (N) Channel improvements, tide gates, deposition chamber. $13,669,000.

Flint River. (MP) Lazer Creek Reservoir. $40,378,000.

Flint River. (MP) Lower Auchumpkee Reservoir. $48,275,000.

HAWAII

Coasts of Hawaiian Islands. (N) Eight harbors for light-draft vessels. $4,737,000.

Haleiwa Beach. (BE) Groins, sand placement & breakwater. $572,000.

Honokahau Harbor. (N) Small boat harbor. $680,000.

Honolulu Harbor—Barbers Point Harbor. (N) Channel improvements, deep draft harbor & small boat harbor projects. $9,028,000.

Kawaihae Harbor. (N) Deep draft harbor; light draft harbor. $2,291,000.

Waikiki Beach. (BE) Groins & Beach restoration. $2,400,000.

ILLINOIS

Evanston. (BE) Beach fill & bulkheads. $392,000.

East St. Louis. (FC) Flood control & interior drainage improvements. $6,180,000.

Kaskaskia River levees. (FC) deletion of cash contribution. $3,498,000.

Wood River Drainage & Levee Dist. (FC) Pumping station. $179,000.

INDIANA

Burns Waterway. (N) Deep draft harbor. $25,000,000.

Indiana Harbor. (N) Channel deepening & widening. $96,000.

Wabash River Interim Report 1. (MP) Lafayette & Big Pine Reservoirs. $44,800,000.

Wabash River Interim Report 2. (MP) Lincoln, Clifty Creek & Patoka Reservoirs. $72,900,000.

IOWA

Iowa & Cedar Rivers. (FC) Levees, floodwalls, channel improvements & appurtenant works. $17,570,000.

Big Sioux River. (FC) Channel improvements. $6,409,000.

Des Moines. (FC) Change in local cooperation requirements. $603,000.

Skunk River. (MP) Ames Reservoir. $12,893,000.

KANSAS

Big Creek at Hays. (FC) Channel improvements, levees, detention reservoir. $2,702,000.

John Redmond Dam. (FC) Acquisition of lands for national waterfowl refuge. $730,000.

Walnut River. (MP) El Dorado, Towanda and Douglas Reservoirs; and local protection. $66,036,000.

Arkansas River at Great Bend. (FC) Levees, channel diversion and channel improvement. $4,030,000.

KENTUCKY

Big Sandy River. (MP) Yatesville, Paintsville and Panther Creek Reservoirs; and local protection. $51,491,000.

Martins Fork Reservoir. (MP) $4,800,000.

LOUISIANA

Mermentau River. (N) Improvement of shallow draft channel. $2,690,000.

Bayou Bodcau. (FC) Levee & channel improvements. $1,524,000.

Caddo Dam. (FC) Replacement of dam. $1,934,000.

Grand Isle & vicinity. (HFC) Levee improvements. $5,500,000.

Lake Pontchartrain. (HFC) Hurricane barrier, locks & levees. $56,235,000.

Morgan City & vicinity. (HFC) Levee & drainage structures. $8,049,000.

Ouachita River at Monroe. (FC) Floodwall improvements. $520,000.

MAINE

St. John River. (MP) Dickey-Lincoln School Reservoir project for hydroelectric power $227,000,000.

MARYLAND

Tred Avon River, Talbot County. (N) Channel deepening & widening. $323,000.

MASSACHUSETTS

Weymouth-Fore & Town Rivers, Boston Harbor. (N) Channel deepening & widening. $1[illegible]500,000.

MICHIGAN

Alpena Harbor. (N) Channel deepening & widening. $806,000.

Cedar River Harbor. (N) Channel improvements & rubble mound pier. $664,000.

Frankfort Harbor. (N) Channel deepening; maneuvering area & small boat anchorage. $237,000.

Lexington Harbor. (N) Small boat harbor. $570,000.

Saginaw Harbor. (N) Channel deepening. $437,000.

Grand River at Grandville. (FC) Levees & appurtenant works. $1,373,000.

MINNESOTA

Big Stone Lake. (FC) Dam on Minnesota River & channel improvements. $3,885,000.

Roseau River. (FC) Channel improvements; levees & culvert works. $2,550,000.

Zumbro River. (FC) Channel improvements. $975,000.

MISSISSIPPI

Mississippi River & tributaries. (FC) Expansion of Mississippi River & tributaries project. $181,100,000.

MISSOURI

Charlton & Little Charlton Rivers. (MP) Long Branch Reservoir, channel improvements. $9,167,000.

Fishing River. (MP) East Fork & Dry Fork Reservoirs. $7,200,000.

Grand River. (MP) Pattonsburg, Trenton, Mercer, Brookfield & Braymer Reservoirs; and local protection. $218,000,000.

Platte River. (MP) Smithfield Dam; channel improvements. $26,889,000.

MONTANA

Sun River at Great Falls. (FC) Deletion of local cash contributions. $31,000.

NEBRASKA

Little Nemaha River. (FC) Levees & channel work. $1,524,000.

NEW JERSEY

Perth Amboy. (BE) Bulkhead for shore protection. $82,000.

Shrewsbury River. (N) Channel improvements & jetties. $4,090,000.

Rahway River. (FC) Local protection at S. Orange. $1,514,000.

Elizabeth River. (HFC) Levee & channel improvement. $9,769,000.

NEW YORK

New York, New Jersey Channels. (N) Deep draft channel widening. $2,581,000.

New York Harbor anchorages. (N) Enlarging & deepening anchorage areas. $44,852,000.

Rondout Harbor. (N) Channel improvement. $20,000.

East Rockaway Inlet & Jamaica Bay. (HFC) Hurricane barrier, beach fill & periodic nourishment. $32,620,000.

Staten Island. (HFC) Beach fill, levees, groins & drainage facilities. $6,230,000.

Saw Mill River & tributaries. (FC) Channel improvements, levees & floodwalls. $1,924,000.

NORTH CAROLINA

Cape Fear River. (N) Shallow draft channel improvements. $1,510,000.

(Continued on Page 23)

FROM THE SPEAKERS ROSTRUM

VAdm. I. J. Galantin, USN

Excerpts from address by VAdm. I J. Galantin, USN, Chief of Naval Material, at the Electronics Industries Assn. Systems Effectiveness Conference, Washington D.C., Oct. 19, 1965.

Systems Effectiveness

* * * * * * * * *

One of my primary functions as Chief of Naval Material is to allocate resources—men and talent, money and facilities. I have to synthesize and arbitrate conflicting demands for finite resources. Almost every request for resources that I receive is phrased in terms such as: "I need more people and more money. If you will give them to me, I can deploy my system in less time and at reduced overall cost."

More than three hundred systems compete for Navy resources, and industry has at least as many more proposed systems waiting in the wings. Navy systems must, in turn, compete with the Army and Air Force systems within the resources available to the DOD.

The diversity of Navy systems is difficult to appreciate. They span the entire spectrum of warfare. In the naval sphere systems proposals extend from equipment for underwater swimmers to space vehicles, from plastique limpet mines to thermonuclear devices. Defense decision makers are called upon to appraise these diverse systems, relate them to defense needs and appropriately apportion resources to their support.

But diversity among systems is not the only decision problem area. For any given mission objective a number of competing possible approaches must be appraised. Each of these proposed systems may have a champion who is doing his persuasive best to "sell" his approach. Each champion has his own compelling argument. Each system excels in some particular:

"A" is more reliable.
"B" will be less expensive.
"C" uses fewer people.

Fortunately we have a way of working out the best overall solution. The systems effectiveness discipline provides a framework for molding many alternatives into one optimum system.

Other frameworks are useful for their purposes. Contract definition and formal source selection procedures are excellent tools. PERT, milestoning and similar management techniques are superior cost and scheduling mechanisms. But in themselves they do not substitute for a discpline oriented toward mission accomplishment.

The methodology of systems effectiveness provides an excellent means of solving one important problem—the problem of expressing "judgment". Managers are required to make judgment decisions. And too often in the past, judgment was equated with persuasive argument and the turning of phrases. Now it's not.

The systems effectiveness discipline gives visibility to judgments. It analyzes and explicates judgments. . . .

Systems effectiveness provides a structure in which figures, proved or estimated, measured or guessed at, can be prominently displayed, arrayed against competing figures and analyzed under a spotlight. It gives formal visibility to the decision process as a whole.

Here are some of the considerations which might go into a typical systems effectiveness analysis. . . .

Within the management field, for example, systems effectiveness becomes the goal of the comptroller, the project manager and the management analyst.

On the military side, the systems effectiveness discipline combines the point of view of the strategist, the operations analyst, the tactician and the fleet sailors.

Systems effectiveness is even more compelling in drawing together the engineering fraternity. The past 15 or 20 years have been marked by the development of a number of important engineering disciplines. Two classic examples are reliability engineering and maintainability engineering. Others are value engineering, safety engineering and human engineering. The logistician is now thoroughly appreciated, whereas 15 years ago he was relegated to some shadowy organizational box called "supply support." Overall, a sizeable number of separate varieties of engineers, managers and military types contribute today to systems effectiveness. . . .

Now let's see who in the Navy is most concerned about systems effectiveness.

Of course it is a truism that concern for systems effectiveness reaches throughout the military hierarchy, through the Office of the Secretary of Defense and upward through the highest levels of the executive and legislative branches of our Government.

But the specifics of this concern tend to focus on one individual, the Chief of Naval Material. As Chief of Naval Material I am responsible (with certain exceptions) for providing the material support of the operating forces of the Navy and the Marine Corps. Fortunately, I have lots of good help, the four material bureaus and the Navy project managers. . . .

The bureaus and the projects are under considerable pressure to "do good work" at top speed and at minimum cost. The pressures which are perhaps most obvious and best publicized are those which call for reducing costs. But optimum costs are always related to optimum engineering. There is no such thing as cost effectiveness without systems effectiveness.

So these key line elements of the Naval Material Support Establishment—the people with whom many of you work on Navy warfare systems—shape their decisions in terms of systems effectiveness. They have to. The standards established for Navy Technical Development Plans require the developmental groups to build their systems effectiveness decisions around the various systems effectiveness formulas. Thus this concern is real, formal and enforced. It is not academic or remote.

So far I have discussed systems effectiveness largely in terms of the military employment of the concept, and as expressed by the Navy's analysis of the systems effectiveness problem. The systems effectiveness philosophy, however, is not limited to the military manager, nor is the Navy approach the only approach.

The Air Force Systems Command (AFSC), through the Weapons Systems Effectiveness Industrial Advisory Committee (WSEIAC), has developed a separate systems effectiveness methodology. The WSEIAC procedures differ somewhat, but not fundamentally, from those of the Navy.

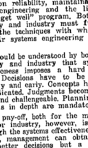
The conceptual models developed by AFSC and by the Navy provide management tools not only for the military but for industry as well. Using these tools, top management in industry is in a better position to appraise its own effort and, through use of common and compatible tools, can better understand the military decision process.

Industry can contribute to the further development of the systems effectiveness concept. This participation, I believe, will be in two separate areas. The first will be the further detailed development of systems effectiveness methodology, techniques and model structures. The second will be the engineering application of this discipline to systems of the future.

The Navy cannot afford to "build one and try it" or to subsequently patch on reliability, maintainability, value engineering and the like in some "get well" program. Both the military and industry must further refine the techniques with which to do their systems engineering homework.

It should be understood by both the military and industry that systems effectiveness imposes a hard discipline. Decisions have to be faced squarely and early. Concepts have to be explicated. Judgments become visible—and challengeable. Planning and analysis in depth are mandatory.

The pay-off, both for the military and for industry, however, is high. Through the systems effectiveness discipline, management can obtain not only better decisions but a higher and earlier confidence in these decisions.



Gen. B. A. Schriever, USAF

Excepts from address by General B. A. Schriever, Commander, Air Force Systems Command, at Air Force/Industry Data Management Symposium, Los Angeles, Calif., Sept. 28, 1965.

The Data Management Challenge

If the format of this Data Management Symposium should remind some of you of the management conference held at Monterey in May of 1962, that would be perfectly natural. That conference was both the inspiration and model for this one. It was at Monterey that Air Force data management received its strong new impetus and direction. . . .

The Monterey conference directed attention toward our growing data problems. In the three years since Monterey, we have made considerable progress toward solving a number of them.

First, we have brought data requirements in contracts out in the open. In this way we have given visibility to a major cost area of systems acquisition which had previously been hidden. We can now question the necessity of various data requirements, determine whether they best serve their intended purpose and assure that they meet the specific needs of our modern system management techniques. . . .

Second, we have cut down significantly on Air Force data storage and retrieval requirements through the concept of deferred ordering of data. Under this method, provision is made for the contractor to retain certain data until specifically ordered for Air Force use. This approach places a constraint on our people to order data only when actually needed, and it assures that the data received will be completely up to date. . . .

Third, we have developed a cadre of Data Management officers and supporting personnel who have a comprehensive view of the field and are able to work with their counterparts in industry to iron out data problems contract by contract and item by item.

Fourth, the Systems Command and the Logistics Command have achieved excellent cooperation in managing data over the entire life cycle of systems. This cooperation is essential since data cannot be isolated in organizational compartments. Rather, the basic data flow must be continuous from a system's conceptual phase through its final disposal.

Fifth, we are working with Headquarters, U.S. Air Force, participating in joint committees and other efforts to standardize data management policies and procedures throughout the Services, the Defense Supply Agency and NASA. Since we all work with the same industrial community, it makes sense to standardize where we can. The Air Force Authorized Data List, as set forth in Volume II of AFSC/AFLC Manual 310-1, lends itself to standardization by the Department of Defense for routine administrative type items. It also provides a cross check of departmental requirements. . . .

I am pleased with the progress we have made in data management, but I am far from complacent. We have won a number of battles against excessive data requirements, but we have not yet won the war.

To keep a strict discipline on Air Force data requirements we should know what data a contractor will generate in support of his job. Most of this information is identical to that needed by Air Force people to do their jobs. It may have to be documented differently to be useful to us, but the basic information is the same. In view of this fact, I expect our data managers to bring about the greatest possible Air Force use of the data which is the normal fallout of the contractors' efforts. At the same time they should strive for the least amount of change in format in contractor data submitted to the Air Force. This means that we must expand our efforts to tailor Air Force data-acquisition programs to the contractor's data-generating activities. When we achieve this, we will get the information we need at the lowest cost and with the least interference in hardware development.

Now I would like to throw out another challenge—the need to foster innovation in our research and development management. Our data management efforts to date have been concentrated on the acquisition of information pertinent to the mainstream of systems program development during and after the definition phase. Yet R&D fields, apart from this mainstream, also generate vast amounts of data. These have not always been given an adequate degree or level of management attention, with the result that the flow of R&D information to our systems and equipment programs may sometimes be deficient.

We need better overall internal control of the flow of R&D documentation. If we can achieve this, we will be tackling data acquisition problems throughout the entire life cycle of our systems. . . .

The importance of solving our data problems should be clear to all of us. This age of rapid change makes unprecedented demands on our management skills. Fewer major systems are coming into the inventory, and these are increasingly complex. As a result, rapid, accurate and streamlined communication between Government and industry was never more important than it is today. The restraints of dollars, performance and schedules demand that we exert efficient controls on all aspects of our programs.

Thus the need for efficient data management permeates the fabric of all our management activities. It is increasingly important to improve our mutual understanding of each other's jobs, the decisions we have to make and the data we need to support these decisions.

Procurement Career Program Initiated for Military and Civilian Personnel

A milestone in procurement management has been established by the Department of Defense with the initiation of a career development program for more than 25,000 civilian and 3,300 military procurement personnel. This program, a DOD-wide career plan, could easily serve as the model for similar career growth plans in all logistics functional areas.

The common objective of both the Military Procurement Career Management Program and the Civilian Procurement Career Management Program is to combine the best futures available from career programs existing in the Military Departments to improve the career system throughout DOD and to insure that we always have highly competent personnel in our key procurement management positions, as well as to provide ample opportunity for promotion throughout the entire system. Appropriate recognition of the inherent differences between military and civilian career progression objectives is acknowledged by the establishment of coordinated, DOD-wide systems for each.

It seems natural and logical that the first DOD-wide logistics career development program should start in the procurement career field. Since DOD obligates approximately $28 billion each year in procuring the equipment and services needed to support our Armed Forces, Secretary McNamara feels that it is essential that recognition be given to the men and women responsible for this important function, and that they have adequate opportunities for improved career specialization and promotion. On the broader front, it is clear that this philosophy meshes well with the President's expressed desire and practice of rewarding professional Government career people of outstanding competence with positions of greater responsibility. To date over 50 Federal executives have been promoted by the President to top positions in their agencies.

In addition to the sheer size of the procurement task, another reason for selecting the procurement category as the pilot test area is the sensitive interface between Government buyers and the defense industrial community. In no other area is the need more critical for highly competent and qualified personnel or, when lacking, more apparent than in the negotiation and administration of contracts. In the past three and one-half years, DOD has concentrated management effort on (1) placing greater risk on contractors through contractual arrangements (contract types) which reward or penalize the contractor in relation to his performance on predetermined objectives and (2) on introducing many interrelated management disciplines (e.g., Project Management, Contract Definition Phase, Multi-Dimensional Incentive Contract, Multi-Year Procurement, Weighted Guidelines, Contractor Performance Evaluation, PERT/Cost, etc.). Hence, procurement has become much more sophisticated in the past three years and effective procurement now requires the wider application of broader skills and better techniques. Therefore, the assurance that qualified personnel are available—and sufficiently motivated—to man the key procurement jobs is essential.

The procurement career development program started with a request by Secretary McNamara, in January 1965, to the Assistant Secretaries of Defense for Manpower and for Installations and Logistics and to military and civilion designees from the Military Departments and the Defense Supply Agency to conduct a study and recommend the actions necessary to assure, on a continuing basis, that qualified men and women were available to carry out the procurement functions in the Defense Department. In approving the recommendations submitted by the Civilian Joint Study Group and by the Military Joint Study Group, Secretary McNamara stated, "When implemented, they [the recommendations] will represent an important step toward achieving improved career progression in the procurement function."

Civilian Procurement Career Management Program.

Widening the civilian career development field will be accomplished by the movement of employees across series lines of jobs, where necessary. Increased mobility of civilian personnel is an important objective of this program. Civil Service approval will be obtained. Occupational areas under the program include: GS-1101, General Business and Industry; GS-1102, Contract and Procurement; GS-1103, Industrial Property; and GS-1150, Industrial Specialist.

In addition, civilian positions in any other series are included where 50 per cent or more of the duties and responsibilities involve either pre-award or post-award contracting functions.

Training of employees will play an important role in the new procurement program. College graduates will be recruited to provide an adequate number of highly qualified personnel at a trainee level. These young grads may include industrial engineers, business administrators, managers, lawyers and liberal arts graduates.

Also, the program calls for mandatory training at the entrance, intermediate and senior levels of the employee's career field.

Secretary McNamara has further directed that the Services should investigate and develop a plan to provide for rotational assignments in industry. This will provide for better understanding of the special problems of both industry and Government.

The new program provides for the rotation of cross-training among DOD components in establishing the Civilian Procurement Career Management Program. The program is to be established within 12 months by the Assistant Secretary of Defense (Manpower) in coordination with the Assistant Secretary of Defense (Installations and Logistics).

Military Procurement Career Management Program.

Each Military Department is to provide for approval by the Assistant Secretaries for Manpower and for Installations and Logistics a time-phased plan for the accomplishment of the recommendations of the Military Joint Study Group. The Military Procurement Career Management Program requires each Military Department to establish a uniform system for insuring that qualified personnel are assigned to designated key procurement billets. They must also have minimum standards for qualification, including three years direct procurement experience, three years in procurement related functions and attendance at an executive training refresher course. Also, each Military Department will establish a broader base of procurement billets for 1st Lieutenant and Captain (Navy: Lieutenant (junior grade) and Lieutenant) and rotational patterns to utilize to the maximum extent practical those officers with procurement experience. This is the prime objective of the military program.

Other recommendations for the military program include maximum use of personnel with college and graduate education in the procurement field; minimum experience and educational requirements for each level; minimum tours for all procurement positions; and the maintenance of complete and current data on procurement personnel resources and requirements—including coordination with the Defense agencies to assure that requirements of those agencies will be met.

The Military Departments have identified those key procurement positions which should be filled by only military personnel and those positions

(Continued on Page 25)

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Catalog No. C41.6/9:En3 $2.25.

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Inventory of Automatic Data Processing Equipment in the Federal Government. June 1965. Provides information on the number of electronic computers in use throughout the Federal Government. 1965. 365 pp.
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A Survey of Federal Government Publications of Interest to Small Business. From the vast output of booklets, pamphlets and leaflets published by the various Federal Government agencies, those likely to be of assistance to the small business sector are listed in this volume. 1965. 118 pp.
Catalog No. SBA 1.18/2:G74/965 45¢

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Order AD–620 294 Load Carrying Capacities of Gear Lubricants of Different Chemical Classes Based on Results Obtained with Wadd High Temperature Gear Machine Used With Induction Heated Test Gears. Air Force Aero Propulsion Lab., Wright-Patterson AFB, Ohio, April 1965, 47 pp. $2.

Order AD–620 329 The Stress Corrosion and Elevated Temperature Properties of Magnesium-Lithium-Silicon alloys. Army Frankford Arsenal, Philadelphia, Oct. 1964, 17 pp. $1.

Order AD–618 681 Effects of Alloying Upon Certain Properties of 55.1 Nitinol, Naval Ordnance Lab, White Oak, Md., May 1965, 42 pp. $2.

Order AD–619 075 First Seminar on Fatigue & Fatigue Design. Columbia University Institute for the Study of Fatigue & Reliability, for the Defense Department, Dec. 1963, 175 pp. $5.

Order AD–620 513 On the Mechanisms of Stress-Corrosion Cracking. Martin's Research Institute for Advanced Studies, Baltimore, for the Army, Aug. 1965, 66 pp. $3.

Order AD–619 373 Toward a General Methodolgy for Systems Evaluation. HRB Singer, State College, Pa., for the Navy, July 1965, 73 pp. $3.

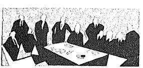
Order AD–617 904 Some Developments in Management Science and Information Systems with Respect to Measurement in Accounting. Carnegie Institute of Technology, Pittsburgh, for the Navy, March 1965, 38 pp. $2.

Government research and development reports are available to science and industry at price indicated from:

Clearinghouse for Federal and
Scientific Information
Department of Commerce
Springfield, Va. 22151

Authorized DOD contractors and grantees may obtain these documents without charge from:

Defense Documentation Center
Cameron Station
Alexandria, Va. 22314



MEETINGS AND SYMPOSIA

FEBRUARY 1966

Eight Joint Industry-Military-Government Packaging and Materials Handling Symposium, Sheraton Park Hotel, Washington, D.C., Feb. 28-March 2. Sponsors: National Security Industrial Assn., Office of Secretary of Defense, Military Services, Department of Commerce, NASA, GSA and AEC. Contact: W. J. Monaghan, NSIA, Suite 800, 1030 15th St., N.W., Washington, D.C.

Interdisciplinary Aspects of Radioactive Energy Transfer Symposium, Feb. 24-26, Sheraton Hotel, Philadelphia, Pa. Sponsor: Office of Naval Research. Contact: Morton Cooper, Office of Naval Research (Code 438), Department of the Navy, Washington, D.C., telephone (Area Code 202) OXford 6-6839.

MARCH 1966

National Conference on Space Maintenance and Extra Vehicular Activity, March 1-3, at Meyer Motor Inn, Orlando, Fla. Sponsors: Air Force Propulsion Laboratory and the Martin Co. Contact: Mr. E. May (APFT), Air Force Aero Propulsion Laboratory, Wright-Patterson AFB, Ohio, telephone (Area Code 513) 253-7771, ext. 27107.

Symposium on the Coupling of Basic and Applied Corrosion Research, March 21-22, National Bureau of Standards, Washington, D.C. and Gaithersburg, Md. Sponsors: Office of Naval Research, Naval Research Laboratory and the National Bureau of Standards. Contact: Dr. Richard C. Carlston, Office of Naval Research (Code 423), Department of the Navy, Washington, D.C., telephone (Area Code 202) OXford 6-1801.

Conference on Functional Analysis, March 28-April 1, at the University of California, Irvine, Calif. Co-sponsors: Air Force Office of Scientific Research and the University of California. Contact: R. G. Pohrer (SRMM), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C., telephone (Area Code 202) OXford 6-5248.

APRIL 1966

Second Symposium on Marine Bio-Acoustics, April 6-8, American Museum of Natural History, Central Park West at 79th St., New York City and Naval Training Device Center, Port Washington, N.Y. Sponsor: Naval Training Device Center. Contact: F. E. Wolf, Jr, Research Program Manager, Naval Training Device Center, Port Washington, N.Y., telephone (Area Code 516), PO 7-9100, ext. 550.

Conference on Ground-Based Aeronomic Studies of the Lower Ionosphere, April 11-15, Defense Research Telecommunications Establishment (DRTE), Ottawa, Canada. Co-sponsors: Air Force Cambridge Research Laboratories and DRTE. Contact: W. Pfister (CRUB), Air Force Cambridge Research Laboratories, L. G. Hanscom Field, Mass., telephone (Area Code 617), CR 4-6100, ext. 3019.

Symposium on Generalized Networks, 14th in a series of international symposia organized by the Polytechnic Institute of Brooklyn, Microwave Research Institute, April 12-14, New York City. Sponsors: Air Force Office of Scientific Research, Office of Naval Research and the Army Research Office, Society for Industrial and Applied Mathematics and the Institute for Electrical and Electronics Engineers. Contact: Lt. Col. E. P. Gaines, Jr, (SREE), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C., telephone (Area Code 202) OXford 6-3671.

Twentieth Annual Frequency Control Symposium, April 19-21, Shelburne Hotel, Atlantic City, N.J. Sponsor: Army Electronics Laboratories. Contact: M. F. Timm, Solid State & Frequency Control Div., Army Electronics Laboratories, Fort Monmouth, N.J., telephone (Area Code 201) 535-1728.

Symposium on Mathematical Aspects of Computer Science, dates undetermined, New York City. Sponsors: Air Force Office of Scientific Research, Army Research Office-Durham, Institute for Defense Analyses, Assn. for Symbolic Logic and Assn. for Computing Machinery. Contact. Capt. J. Jones, Jr. (SRMA), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C. telephone (Area Code 202) OXford 6-1302.

MAY 1966

Symposium on Electrode Processes, May 1-6, Cleveland, Ohio. Co-sponsors: Air Force Office of Scientific Research and the Electrochemical Society, Inc. Contact: Lt. Col. M. D. Sprinkel (SRC), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C., telephone (Area Code 202) OXford 6-8706

Bionics Symposium 1966, May 3-5, Sheraton Hotel, Dayton, Ohio. Sponsors: Aerospace Medical Research Laboratory, Aerospace Medical Div.; and Avionics Laboratory, Air Force Research and Technology Div. Contact: Dr. H. L. Oeistreicher (MRBAM), Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio, telephone (Area Code 513) 253-7111, ext. 3-6108.

Ninth Navy Science Symposium, May 5-6, Departmental Auditorium, Constitution Ave., between 12th and 14th streets, N.W., Washington, D.C. Sponsor: Office of Naval Research. Contact: Robert J Mindak, Conference Chairman, Office of Naval Research (Code 104), Department of the Navy, Washington, D.C., telephone (Aren Code 202) OXford 6-4720.

Third Annual Symposium on Military Oceanography, May 11-13, at San Diego, Calif. Sponsor: Oceanographer of the Navy. Host: U.S. Navy Electronics Laboratory, San Diego. Contact: Office of the Oceanographer of the Navy, Washington, D.C. telephone (Area Code 202) OXford 8-3940.

Business Opportunities Conference To Be Held in Hawaii

A business opportunities conference will be held in Honolulu early in February to assist Hawaii's industrial and scientific community in developing state sources for Government contracts.

The two-day conference will be conducted by the Departments of Defense and Commerce, assisted by other Federal agencies including the Small Business Administration.

The conference, which is the first of its kind to be held in Hawaii, will meet Feb. 3-4 in Turner Hall, U.S. Army Reserve Armory, Fort Derussey, Honolulu.

The business opportunities and procurement conference activity is one of the Department of Defense programs conducted by the Directorate for Small Business and Economic Utilization, Office of the Assistant Secretary of Defense (Installations and Logistics), to develop and utilize capable and competitive sources, particularly small businesses.

CALENDAR OF EVENTS

Dec. 26-31: American Assn. for Advancement of Science Meeting, Berkeley, Calif.

Jan. 16-14: Society of Automotive Engineers Convention, Detroit, Mich.

Jan. 11-12: "Man's Extension Into the Sea, Symposium, Statler Hilton Hotel, Washington, D.C.

Jan. 13: 18th Pacific Coast Regional National Security Industrial Assn. Dinner, Los Angeles, Calif.

Jan. 17: National Aerospace Services Assn. Eighth Annual Army Aviation Contract Services Symposium, Statler Hilton Hotel, Washington, D.C.

Jan. 29-31: Fourth Annual Pinellas County Industrial and Aerospace Exhibition, St. Petersburg, Fla.

Jan. 30-Feb. 4: American Society of Civil & Structural Engineers Meeting, Miami Beach, Fla.

Jan. 31-Feb. 4: American Society of Civil Engineers Meeting, Miami Beach, Fla.

Feb. 2-4: West Coast Winter Convention on Military Electronics, Los Angeles, Calif.

Feb. 6-7: American Institute of Chemical Engineers Meeting, Dallas, Tex.

Feb. 10-11: Armed Forces Communications & Electronics Assn. Symposium, Washington, D.C.

Feb. 13-16: Radiation Research Society Meeting, Coronado, Calif

Feb. 17-19: Institute of Management Sciences Meeting, Dallas, Tex.

Feb 28-March 2: 8th Joint National Security Industrial Assn. Industry-Military-Government Packaging & Materials Handling Symposium, Washington, D.C.

March 3-4: DOD-National Security Industrial Assn. Advanced Planning Briefing for Industry, Boston, Mass.

March 9-16: DOD-National Security Industrial Assn. Advanced Planning Briefings for Industry, Atlanta, Ga.

March 16-17: DOD-National Security Industrial Assn. Advanced Planning Briefings for Industry, St. Louis, Mo.

March 21-24: Institute of Electrical & Electronic Engineers Exposition, New York City.

March 21-April 1: National Defense Seminar, Carbondale, Ill.

March 22-31: American Chemical Society Meeting, Pittsburgh, Pa.

March 23-26: Air Force Assn. Convention, Dallas, Tex.

March 27-April 2: American Society of Photogrammetry Meeting, Washington, D.C.

Comprehensive Study To Be Made of All DOD Hospitals in U.S.

The Department of Defense, with the assistance of outside consultants, is conducting a comprehensive study of DOD hospitals and outpatient clinics in the continental United States.

The study was ordered by Secretary of Defense Robert S. McNamara to improve the design and management of military hospitals, outpatient clinics and hospital management training programs.

The Military Departments now operate more than 250 hospitals and 450 dispensaries which have a capital investment of more than a billion dollars and employ about 1706,000 military and civilian personnel. The annual operating costs of these facilities and related medical services will exceed one billion dollars in FY 1966. It is essential that they be managed effectively in order to provide the best medical service at the lowest possible cost.

Secretary McNamara has established a Hospital Management Evaluation Committee to oversee the preparation of the study plan and the progress of the study, and to analyze the consultants' reports. The committee is headed by Thomas D. Morris, Assistant Secretary of Defense (Manpower).

The committee is expected to prepare a final report for transmittal to the Secretary of Defense in November 1966. This report will be a comprehensive plan of action and will outline long-range objectives to improve the overall management of the medical services and specific recommendations where results in a given area can be accomplished in a shorter period of time.

Contracts for preliminary studies have been signed with McDonnell Aircraft Corp., Electronic Equipment Div., St. Louis; Daniel, Mann, Johnson and Mondenhall, Los Angeles; Space-General Corp., Los Angeles; and Bolt, Beranek and Newman, Inc., Los Angeles.

The U.S. Army Medical and Research Development Command is executive agent for the study.

Air Force Picks Martin-Marietta, Boeing for SRAM Contract Definition

Air Force Secretary Harold Brown has selected the Martin-Marietta Corporation of Orlando, Fla., and The Boeing Company of Seattle, Wash., to proceed with the contract definition phase of the Short Range Attack Missile (SRAM) program.

Both firms will be awarded fixed-price contracts valued at about $2.75 million each. The competing contractors will submit further proposals. If a decision is made to go forward with SRAM, one contractor will be selected in late 1966 to continue the program.

The SRAM will be an air-to-surface attack missile with nuclear capability. It could be carried by the F-111 aircraft and would be adaptable to the late model B-52 aircraft.

Purpose of the contract definition phase is to verify the preliminary SRAM design and engineering and to set firm contract and management planning.

The SRAM program is managed by the Aeronautical Systems Division of the Air Force Systems Command at Wright-Patterson AFB, Ohio.

Navy Office of Material Publishes New Guides

The U.S. Navy's Office of Material has announced the names of two new publications which are available to business and industry representatives.

Titles of the new booklets are, "Survey of Procurement Statistics" NAVMAT P-4200 of June 1965 and "Selling to Navy Prime Contractors" NAVMAT P-1030 of October 1965.

Survey of Procurement Statistics provides selected statistics on Navy procurement as a reference in planning future policies. Requests for copies of this publication should be addressed to the Chief of Navy Material (MAT 215), Washington, D.C.

Selling to Navy Prime Contractors is a summary of Navy subcontracting programs, plus a directory of firms listed by state and general category of defense items produced with name and address of corporate official to be contacted for information of subcontract opportunities. It is available from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

New Civil Works Listing

(Continued from Page 16)

Neuse River. (MP) Falls Reservoir. $18,600,000.

New Bern. (HFC) Hurricane tidal barrier, $10,400,000.

Ocracoke Island. (HFC & BE) Beach stabilization & hurricane protection. $1,636,000.

NORTH DAKOTA

James River. (MP) Pipestem Reservoir. $3,083,000.

OHIO

Ashtabula Harbor. (N) Deepening harbor basin. $1,840,000.

Lorain Harbor. (N) Change in local cooperation requirements. $1,600,000.

Rocky River Harbor. (N) Channel deepening & widening. $235,000.

West Harbor. (N) Breakwater & access channels. $544,000.

Chagrin River. (FC) Breakwaters, channel improvements & levees. $2,200,000.

Hocking River Basin. (FC) Channel improvements at Athens. $4,520,000.

OKLAHOMA

Crutcho Creek. (FC) Channel improvements. $1,801,000.

Shidler Dam & Reservoir. (MP) $6,150,000.

OREGON

Chetco River. (N) Jetty extension, turning basin, access channel & deepening. $1,308,000.

Port Orford. (N) Breakwater extension. $696,000.

Tillamook Bay and Bar. (N) Rubble mound jetty. $9,000,000.

Grande Ronde. (MP) Lower Grande Ronde and Catherine Creek Reservoirs. $20,440,000.

John Day Lock and Dam. (FC) Acquisition of lands for a national waterfowl refuge. $706,000.

Willow Creek. (MP) Heppner Reservoir. $6,080,000.

PENNSYLVANIA

Chartiers Creek. (FC) Channel improvements. $12,207,000.

Sandy Lick Creek at Du Bois. (FC) Channel improvements. $1,654,000.

RHODE ISLAND

Cliff Walk. (BE) Protective structures. $340,000.

Providence River and Harbor. (N) Channel deepening & widening. $13,900,000.

Westerly. (HFC) Beach stabilization and dikes. $3,287,000.

SOUTH CAROLINA

Hunting Island Beach. (BE) Groin and beach replenishment. $319,000.

TEXAS

Chocolate Bayou. (N) Channel & salt water barrier. $1,254,000.

Houston Ship Channel (Green Bayou). (N) Deep draft channel & shallow draft extension. $470,000.

Trinity River. (MP) Comprehensive development of Trinity River Basin for navigation, flood control & other purposes. $83,000,000 (authorization limitation).

Buffalo Bayou (White Oak Bayou). (FC) Channel improvements. $1,800,000.

El Paso. (FC) Detention Dams, diversion dike and channels. $12,493,000.

Highland Bayou. (FC) Channel improvements. $3,500,000.

Sanders, Big Pine & Collier Creek. (FC) Road relocation at Pat Mayse Reservoir. $810,000.

Taylors Bayou. (FC) Channel improvements. $6,004,000.

VIRGINIA

Newport News Channel. (N) Anchorage areas. $7,095,000.

Newport News-Norfolk Harbor. (N) Deepening channel and anchorage areas. $25,600,000.

WEST VIRGINIA

Cheat River. (MP) Rowlesburg Reservoir. $183,548,000.

OTHER ATHORIZATIONS

Whitney Dam, Tex. (FC) Replacement of roads. $130,000.

Eel River, Calif. (FC) Reimbursement for protective works. $3,000,000.

Calumet Harbor and Railroad, Illinois and Indiana. (N) Protection for railroad bridges. $350,000.

NAVIGATION SURVEYS

San Francisco County, Calif. (beach erosion).
Intracoastal Waterway from the Caloosahatchee River to the Withlacoochee River, Fla.
Indian River County, Fla. (beach erosion).
Calumet River, Ill.
Lake Dauterive & Chareton Floodgate, La.
Gulf Intracoastal Waterway, La.
Jonesport Harbor, Maine.
Blue Hill, Harbor, Maine.

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INDUSTRY BRIEFS

The first operational training missions of the Roadrunner target missiles were flown recently at McGregor Range, N. M., in support of training Hawk missile crews. The Roadrunner was developed and produced for the U.S. Army by the Columbus Division of North American Aviation, Inc. . . . Reeves-Hoffman Division, Dynamics Corporation of America, received a commendation for its quality control on the Bullpup missile program . . . The Ling-Temco-Vought, Inc., "Gray Eagle" trophy, given to the Naval aviator who has held his aviator designation longer than any other, was given to Lieutenant General Richard C. Mangrum, Assistant Commandant of the U.S. Marine Corps. General Mongrum became the 14th recipient of the honor and the first Marine to win it.

A working scale model of The Boeing Company's Vertol Division tilt-float helicopter was displayed for the first time at the Sixth Annual Rescue Symposium held in Atlantic City. The design concept is the result of the Vertol Division design feasibility study under contract to the U.S. Navy Bureau of Naval Weapons . . . A NATO briefing team, comprised of nine military officers representing eight NATO countries, toured the McDonnell Aircraft Corporation plant in St. Louis.

At a brief "roll-out" ceremony at its Von Karman Center, Aerojet-General Corporation turned over its first battle ready "underwater missile," the Mark 46 Torpedo, to the U.S. Navy . . . The U.S. Air Force Air Rescue Service accepted the first new combat-equipped HH–3C long range recovery helicopter from Sikorsky Aircraft. In jungle camouflage paint, the helicopter demonstrated rescue techniques developed especially for combat crew recovery operations.

Northrop Corporation delivered the last two of a squadron of 12 F–5 fighters scheduled for Vietnam duty to Williams AFB, Ariz. . . . Aerospace Industries Association has completed its 1965 edition of the Directory of Foreign Helicopter Operators . . . Rocketdyne dealt with a total of 6,507 small business firms during FY 1965—92 more than the previous fiscal year. Of the more than 8,500 companies with which the North American Aviation, Inc., division did business, 77.7 per cent were small business firms . . . Martin Company has completed the manufacture of the first "boilerplate" test model of the Air Force's newest spacecraft—the PRIME SV–5D lifting body . . . Air Force has accepted the AN/TRC–87 Communications System from Motorola, Inc.

The Naval Research Laboratory, Washington, D.C., awarded first-time contracts to 36 small business firms between May and August of this year. One of the awards went to the year-and-a-half old firm of Space and Tactical Systems Corporation in Burlington, Mass. The contract was awarded after a larger firm failed to perform satisfactorily under a larger contract for an item to serve the same function . . . The U.S. Army Engineer District, Kansas City, negotiated contracts with five small business firms for mosquito control spraying in parts of 11 Missouri counties, which were included in a major disaster area as a result of flooding. The District's Mobile office awarded 34 contracts during FY 1964 and FY 1965 to small business firms for development of recreational areas at three reservoir projects—Lake Seminole at Jim Woodruff Lock and Dam, Chattahoochee, Fla.; Lake Sidney Lanier at Buford Dam, Buford, Ga.; and Allatoona Reservoir Recreational Area near Cartersville, Ga.

Gene K. Beare, President of Sylvania Electric Products, Inc., has been elected President of the National Electric Manufacturers Association . . . Ryan Aeronautical Company has begun design and production of a new supersonic Firebee for the Navy . . . Officers of the Spanish Armed Forces were recent visitors at Northrop Corporation's Norair Division. A high point in the visit was taking a tour of the F–5 assembly line. The visit was part of a nation-wide tour of military installations and industry facilities sponsored by the Air Force's Strategic Air Command.

Vitro Laboratories is working on what it believes to be the first "user need" study ever made in the field of oceanographic literature for the Naval Oceanographic Office . . . Raytheon Company's Submarine Signal Division recently delivered to the Navy the first of 10 AN/BQQ–1 integrated sonar systems that will be delivered over the next year . . . A sharpshooting USAF F–104 Starfighter pilot from the 319th Fighter Interceptor Squadron won the Lockheed-California Company "Top Gun" Award in William Tell 1965, the Air Force Worldwide Weapons Meet . . . Bendix Corporation's Mishawaka Division ascribes its winning of a three-year contract of the Talos from the Navy through cost reductions effected by its Zero Defects program . . . A new Pillow Tank production facility will be established at the Arizona Division by Goodyear Aerospace Corporation due to the acceptance of the collapsible containers by the military forces.

The Navy Resale Program

(*Continued from Page 15*)

precepts of customer demand and quality and price of merchandise.

Retail prices of MSTS exchange merchandise are controlled by a profit limitation. The overall net profit goal for each exchange is approximately 10%, and at no time is it to exceed 12% or be less than 8%. These profits are used exclusively to provide necessary welfare and recreation activities for personnel embarked on MSTS vessels.

Commissary Stores.

Commissary stores are the second largest program, in terms of annual sales, of the Navy Resale System. As the name implies, commissary stores are essentially food stores selling groceries, meat and produce both in continental United States and overseas.

Current regulations authorize the stocking of 1,850 line items, including 150 line items reserved for vendor prepackaged meat. Emphasis is placed on providing a reasonable selection of standard food products and a limited range of household items, principally in detergent and bulk paper goods items.

Navy commissary stores may not stock items for the benefit of a few individuals, or gourmet type items. They may stock only those items and selections for which there is a substantial and recurring demand.

Procurement of required stock for commissary stores is usually made from commercial sources on Defense Supply Agency Brand Name Supply Bulletins and on contracts negotiated by Regional Headquarters, Defense Personnel Support Center. Some subsistence items having a resale demand may be transferred from local supply departments. If products desired are not on contract or bulletin, or if the same or lower price is offered in the local trade area, local procurement is made, but cannot exceed $2,500 per order. Local purchase, after reasonable competition from qualified suppliers in local trade area, is usually made for such products as dairy items, meat, produce, bread, rolls, ice cream and similar items.

Resale Item Selection Boards are not used in the Navy. However, some stores may have informal merchandise councils of key personnel to assist and advise the officer in charge in selecting new items. Patron "Want Slips" are used extensively to keep abreast of the Navy family's desires for items not presently carried in the store.

Vendor representatives calling on stores should make advance appointments and avoid lengthy presentations. Descriptive literature or dummy samples of container or package are desirable for visual presentation. While samples are not prohibited, they are not encouraged. Preferred policy is to obtain introductory voluntary price reductions in lieu of sample merchandise for patrons. Information desired on the product includes:

- What's new about the item? Any special features or advantages to similar items now available?
- Nationally advertised or local promotion campaigns?
- Guaranteed sales aspect, if item is of seasonal nature?
- Minimum order and delivery time?
- Sales response at other service commissaries or commercial stores where introduced?

Ship's Stores Afloat.

Ship's stores afloat—as we see them today on 675 ships—range from tugboat to the guided missile cruiser and destroyer and a nuclear-powered super aircraft carrier. All procurement and inventories for Ship's stores afloat are financed by appropriated funds held in a revolving account called the Navy Stock Fund.

The scope of the retail management job and the time and attention devoted to merchandising varies as much as the size and complexity of operations in individual ships. On larger ships, where the Supply Officer has several officer assistants, one officer is usually designated as the Ship's Store Officer, or Sales Officer, and has primary duty in the management and operation of retail stores and service activities, i.e., ice cream fountains, vending machines, dry cleaning plants, laundries, barber shops, cobbler shops and tailor shops.

On board smaller ships, however, the Supply Officer does not have an officer assistant and frequently only a very limited number of experienced senior petty officers are assigned to the resale function.

To assist commands in stocking the authorized items, the Navy Ship's Store Office sponsors several publications. One is the contract bulletins issued by Navy Purchasing Offices, New York and London, and Naval Supply Centers, Oakland, Calif., and Pearl Harbor. The bulletins list the most popular items for which recurring demand is experienced.

The second publication is the Ship's Store Afloat Catalog, which is published by the Navy Ship's Store Office. The same buyers who explore the market for Navy exchanges select and list in this catalog the best buys for the categories of authorized items not covered by the area contract bulletins. It is not the intent of the Navy Ship's Store Office to limit procurement to items in either of these two publications. However, considering the limitations of space and the inability of the average afloat resale personnel to judge the quality of material offered by various salesmen, ships are advised to limit procurement to these publications insofar as practical.

The Navy Ship's Store Office also publishes a third procurement guide, a Ship's Store Afloat Requisitioning, Load List and Shopping Guide. Part "A" of this publication contains a list of the 10 most popular items which are maintained on all quarterly contracts and in fleet issue ships around the world. This permits maximum service and maximum satisfaction to the greatest per cent of ship's company with the fewest items possible.

Part "B" of this publication contains a list of low issue, low cost and low bulk items which are of a necessity or semi-necessity nature. These are the type items that each ship will be expected to carry to last the duration of a deployment.

Part "C" of the publication contains items of a semi-luxury nature; for example, radios, watches, cameras, etc. These are higher price items that are available from the Ship's Store Afloat Catalog and may be procured on a special order basis.

Systems Policies.

The Navy Resale System has some broad policies or philosophic guidelines. Here are a few:

- Service to the customer is primary—profit is secondary.
- In negotiating with vendors, the policy is to require all vendors to sell to activities at the lowest price at which they are selling to any of their customers.
- The policy of nationally known brand name products is promoted because this is a world-wide operation. However, regional products may be procured locally as required.
- The pricing policy is standard world-wide. The sailor pays the same price for an item whether he is stationed in Bangkok, Thailand, or Rota, Spain.
- It obtains and utilizes the most modern business techniques.

The Future.

The Navy Resale System has grown from a rather small and simple beginning to encompass a complex world-wide business that still continues to grow. In light of this expansion, the Navy Ship's Store Office will continue to develop new horizons to further improve on all four programs. Some of the most significant areas are:

- Improvement of facilities.
- Recruitment and training of personnel.
- Better management techniques.
- Increased use of ADP (Automatic Data Processing) equipment.

The System will continue to provide the American sailor with convenient and reliable places to fulfill his requirement. It will try to help raise his standard of living as much as possible by making available to him quality merchandise at the lowest possible cost. This, plus the recreation facilities provided from profits, contributes to morale, improvement and retention of trained and qualified personnel to assure the sea power required in today's, and maybe tomorrow's, world.

Procurement Career Program

(Continued from Page 19)

which should be filled only by civilian personnel. This identification should provide procurement personnel a clearer picture of their career progression potential and, in certain instances, a greater motivation for mobility throughout the procurement field or between activities.

An executive agent will be selected for those phases of the civilian program which should be automated. Automation should be applied to the maximum extent possible. This will provide a central inventory and referral system for all civilian procurement personnel.

Each Military Department, the Defense Supply Agency and other agencies must periodically evaluate and inspect the operation of the career management program within its jurisdiction and make an annual report to the Assistant Secretary of Defense (Manpower), who will coordinate with the Assistant Secretary of Defense (Installations and Logistics).

Greater Opportunities Provided.

The procurement career program, then, is designed to improve procurement management and to assure that only experienced and capable civilians and/or military are assigned to the top key procurement management jobs within the Defense Department. This is to be accomplished by the establishment of procedures or techniques that will encourage more mobility for the civilian force and require more extensive procurement experience for military officers assigned to the top billets. The program seeks to provide greater advanced educational and training opportunities; improved personnel selection and assignment procedures; broad base of understanding by assignment in "related functional experience;" identification of key positions which will be only military and which will be only civilians; automation of the system to the maximum practical extent; and continuous monitoring and evaluation of the system by both the Military Department involved and by the Office of the Secretary of Defense.

Procurement Clinic Set for Salt Lake City

Procurement specialists from the Military Departments, the Defense Supply Agency and the Department of Commerce will be on hand to assist business and scientific firms interested in doing business with the Department of Defense during a procurement clinic to be held in Salt Lake City, Utah, Jan. 14.

For further information on the clinic, which is being sponsored by the Salt Lake City Chamber of Commerce, contact General Max Rich, Executive Secretary, Salt Lake City Chamber of Commerce, P.O. Box 329, Salt Lake City, Utah 84110.

Two-Step Formal Advertising

(Continued from Page 3)

not be evident from the technical proposals. Here is where we enjoy a most unique advantage from this form of formal advertising; we can clarify the technical proposals with the bidders and subsequently accrue the advantages of formal advertising with regard to price.

In addition to defining specifications, the Government-industry dialogue is used to bring marginal proposals up to an acceptable status. The contracting officer will make every reasonable effort to obtain clarification or additional information if he believes that he can bring a proposal action on the part of the contracting up to par. This is not a magnanimous officer. His objective is to increase competition.

The Government should only have to "do the two-step" once for a given requirement. As the specification is defined in step one, the technical/contracting team develops a sufficiently descriptive and not unduly restrictive statement of the Government's requirement, including an adequate technical data package, so that subsequent procurements may be made by conventional formal advertising. This is important because two-step takes a little longer.

As much as the Government would like to see all bidders remain in the running with acceptable technical proposals, some drop out. Unsuccessful bidders are notified and told, in general terms, why their proposals were unacceptable, e.g., that rejection was based on failure to furnish sufficient information or on an unacceptable engineering approach.

Now, in step two, the Government is ready to buy. All of the conditions that need to be present for the use of formal advertising prevail, including adequate specifications. Only successful step one bidders are invited to put a price tag on their proposals in step two and the Invitation For Bid states that these must be the same proposals that were accepted by the Government in step one.

Attention, prospective subcontractors! A list of the firms who have been invited to bid in step two is published in the *Commerce Business Daily* for your benefit. Here is an opportunity for you to take the initiative. Can you help step two bidders to produce what Uncle Sam needs?

As in conventional formal advertising situations, the award in step two will be made to the responsive bidder who offers the most advantageous buy to the Government, price and other factors considered.

Here is a list of some of the items that the Navy has purchased via two-step formal advertising.

- External power monitors.
- Hydraulic test stands.
- Telegraph signal analyzers.
- Machine tools.
- Submarine batteries.
- Propulsion equipment.
- Various electronics material including radar, sonar and radio equipment.

A special training course in two-step formal advertising is being developed in the Department of Defense, and procurements proposed for negotiation are being monitored for possible channeling to the two-step method. There is no doubt that two-step will be with us for a long time—as long as we have complex buys with indefinite specifications; as long as there is a need for some discussion of the technical aspects of our procurements while assuring the full benefits of the formal advertising approach.

Two-step formal advertising is but one of the many flexible purchasing techniques the Navy employs in the market place in order to effectively match the method of procurement with the nature of the requirement. The result is that more and better equipment is made available to support Navy ships and aircraft responding to the many and varied challenges that they face throughout the world.

New Civil Works Listing

(Continued from Page 23)

Popponesset Bay, Mass.
Marquette County, Mich.
Gulfport Harbor, Miss.
Great & Little Bays and tributaries, N.H.
Niagara River, N.Y.
Dickinson Bayou, Tex.
Manchester Harbor, Wash.
Lake Michigan Shoreline, Milwaukee County, Wis. (beach erosion).
Great Lakes & St. Lawrence Seaway: Deicing investigation study.
Chesapeake Bay Study.

FLOOD CONTROL SURVEYS

All streams flowing into the sounds of North Carolina betwen Cape Lookout and the Virginia line except those portions of the Neuse, Pamlico and Roanoke Rivers above the marine reaches.

All streams which drain directly into the Pacific Ocean from San Mateo County, Calif.

Big Mineral Creek, Tex., particularly construction of a highway bridge.

Coasts of Washington, Oregon and California to determine advisability of protection work against storm & tidal waves.

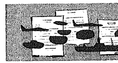
Watersheds of streams in: California which drain directly into the Pacific and of streams, washes, lakes and tributaries, which drain areas in the eastern part of California; the Pacific Northwest which drain directly into the Pacific along the coast of Washington & Oregon; the Western United States which drain areas of the great basin region of Oregon, California, Nevada, Utah, Idaho and Wyoming; the North and South Atlantic Regions.

Grand (Neosha) River, Oklahoma and Kansas (including navigation).

Arkansas River & tributaries at and above Tulsa, Okla.

Hatchie River & tributaries, Tennessee and Mississippi.

Mississippi River, north of Dubuque, Iowa.
Kaneohe-Kailua area, Oahu, Hawaii.
Terrebonne Parish, La., (water supply).
Southeasern Michigan study.
Rio Grande and tributaries.
Colorado River and tributaries above and below Lees Ferry, Ariz.
Boyer River, Iowa.
Keokuk, Iowa.
Black Hawk Creek, Iowa.
Mount Vernon, Ind.
Orange Lake Basin, Fla.
Mayfield Creek, Ky.
Spoon River, Ill.
Verdigris River, Kan.
Sanderson, Tex.
Abbeville, S.C.
New York State Study.
San Francisco Bay Study.
Irondequoit Creek, N.Y. and tributaries including Allens Creek, N.Y.



DEFENSE PROCUREMENT

Contracts of $1,000,000 and over awarded during month of November 1965:

DEFENSE SUPPLY AGENCY

2—Oscar Mayer & Co., Madison, Wis. $1,944,065. 1,212,662 pounds of canned sliced bacon. Madison. Defense Personnel Support Center, Philadelphia.

—C. M. London Co., New York City. $1,420,678. 860,000 yards of wind resistant nylon cloth. Greenville, S.C. and Bradford, R.I. Defense Personnel Support Center, Philadelphia.

—Brooks & Perkins, Detroit, Mich. $1,361,328. 5,623 aircraft cargo pallets. Cadillac, Mich. Defense General Supply Center, Richmond, Va.

3—Electro-Plastic Fabrics, Inc., Pulaski, Va. $1,950,000. 325,150 coated nylon twill ponches. Pulaski. Defense Personnel Support Center, Philadelphia.

—Monsanto Co., St. Louis. $1,334,400. 240,000 gallons of herbicide. St. Louis. Defense General Supply Center, Richmond, Va.

—Marshall Produce Co., Marshall, Minn. $2,213,070. 1,835,379 pounds of dried eggs. Marshall. Defense Personnel Support Center, Philadelphia.

9—Kaiser Steel Corp., Oakland, Calif. $1,599,455. 1,645,022 steel fence posts. Fontana, Calif. Defense Construction Supply Center, Columbus, Ohio.

—Oscar Mayer Co., Madison, Wis. $1,441,775. 1,030,584 29-ounce cans of ham chunks. Madison. Defense Personnel Support Center, Philadelphia.

—The Defense Personnel Support Center, Philadelphia, is issuing these contracts for tropical combat boots: **Safety First Shoe Co.**, Nashville, Tenn. $2,708,732. 273,312 pairs. Huntsville, Ala.; **Hi-Pals Footwear**, Waynesville, N.C. $1,116,060. 104,000 pairs. Darien, Ga.; **Bata Shoe Co.**, Belcamp, Md. $3,020,053. 308,376 pairs. Belcamp.

10—The Defense Fuel Supply Center, Alexandria, Va. has awarded the following contracts for gasoline and fuel oil: Gulf Oil Corp., Houston, Tex. $3,080,018 American Oil Co., Chicago. $2,588,517. Socony Mobil Oil Co., New York City. $2,345,900.

12—Prestex, Inc., New York City. $1,631,320. 1,528,000 yards of cotton duck cloth. Cuero, Tex.; Dalton, Ga.; Memphis, Tenn.; and Louisville, Ky. Defense Personnel Support Center, Philadelphia.

—Mt. Vernon Mills, Inc., Baltimore. $2,102,630. 3,000,000 yards of cotton duck cloth. Memphis, Tenn.; Tallassee, Ala.; and Concord, N.C. Defense Personnel Support Center, Philadelphia.

16—Sierra Engineering Co., Sierra Madre, Calif. $1,607,105. 18,428 helmets for combat vehicle crews. Sierra Madre. Defense Personnel Support Center, Philadelphia.

17—John Ownbey Co., Knoxville, Tenn. $1,225,996. 182,440 nylon-cotton sateen field coats with hoods. Knoxville. Defense Personnel Support Center, Philadelphia.

—Alpha Industries, Knoxville, Tenn. $2,762,132. 454,100 nyon-cotton sateen field coats with hoods. Knoxville. Defense Personnel Support Center, Philadelphia.

19—The Defense Fuel Supply Center, Alexandria, Va. has awarded the following contracts for aviation fuel: **Texas City Refining Inc.**, Texas City, Tex. $3,005,248 23,520,000 gals.; **Philips Petroleum Co.**, Bartlesville, Okla. $3,027,526. 22,902,000 gals and 98,000 fals (Grade 80/87); **Tidewater Oil Co.**, Los Angeles. $2,560,717. 17,640,000 gals.; **American Oil Co.**, Chicago, $2,405,707. 17,310,000 gals.; **Union Oil Co. of Calif.**, Los Angeles. $1,436,860. 9,702,000 gals.; **Shamrock Oil & Gas Corp.**, Amarillo, Tex. $1,113,102. 8,652,000 gals.; **Socony Mobil Oil Co.**, New York City. $1,116,864. 13,440,000 (JP-4 jet fuel); **Richfield Oil Corp.**, Los Angeles. $8,068,319. 54,600,000 gals.; **Socony Mobil Oil Co.**, New York City. $7,409,051. 55,066,600 gals. and 2,744,000 gals. (grade 80/87); **Standard Oil Co.**, Louisville, Ky. $6,520,269. 50,000,000 gals.; **Cities Service Oil Co.**, New York City. $5,772,121. 58,447,080 gals.; **Humble Oil & Refining Co.**, Houston, Tex. $5,207,600. 37,110,000 gals.; **Sinclair Refining Co.**, New York City. $5,207,136. 39,700,000 gals.; **Standard Oil Co., of Calif.**, San Francisco, $5,185,821 35,879,000 gals and 155,000 gals (Grade 80/87); **Tidewater Oil Co.**, New York City. $4,540,143. 34,200,000 gals.; **Continental Oil Co.**, Houston, Tex. $3,600,023. 28,035,800 gals.

—S. I. Handling Systems, Inc., Easton, Pa. $1,739,434. Manufacture & installation of a mechanized materials handling system at the Defense Depot, Ogden, Utah. Defense Depot, Ogden.

—Marathon Oil Co., New York City. $1,005,750. 270,000 barrels of diesel fuel oil. Defense Fuel Supply Center, Alexandria, Va.

23—Eastman Kodak Co., Rochester, N.Y. $1,008,204. 16,880 rolls of aerial photographic film. Rochester. Defense General Supply Center, Richmond, Va.

24—The Defense Fuel Supply Center, Alexandria, Va., has issued the following contracts for petroleum **Standard Oil Co. of Calif.**, San Francisco. $5,218,680. 1,936,000 barrels; **Richfield Oil Corp.**, Los Angeles. $3,521,010. 1,330,000 barrels; **Socony Mobil Oil Co., Inc.**, New York City. $2,538,040. 812,000 barrels; **Union Oil Co. of Calif.**, Los Angeles. $1,324,702. 328,000 barrels; **Shell Oil Co.**, New York City. $1,008,850. 350,000 barrels; **Texaco Inc.**, New York City. $1,781,760. 438,000 barrels.

29—The following contracts for petroleum products have been awarded by the Defense Fuel Supply Center, Alexandria, Va.: **Gulf Oil Corp.**, Houston, Tex. $6,168,506. 22,828,000 gallons of fuel oil, diesel and kerosene and 20,400,000 gallons of motor gasoline; **Atlantic Refining Co.**, Philadelphia, $1,103,778. 930,000 gallons of fuel oil and 8,705,000 gallons of motor gasoline.

—The following contracts for JP-4 jet fuel have been awarded by the Defense Fuel Supply Center, Alexandria, Va.; **Socony Mobile Oil Co.**, New York City. $1,800,606. 22,080,000 gals.; **Atlantic Refining Co.**, Philadelphia. $2,059,700. 28,000,000 gals.; **Sun Oil Co.**, Philadelphia. $1,602,483. 16,537,500 gals.; **Signal Oil Co.**, Houston, Tex. $1,298,808. 15,120,000 gals.

30—Delta Petroleum Co., New Orleans. $1,990,194. 6,843,240 gallons of aircraft lubricating oil. Defense Fuel Supply Agency, Alexandria, Va.

—Refiners Marketing Co., Los Angeles. $1,163,354. 2,430,240 gallons of aircraft lubricating oil. Defense Fuel Supply Center, Alexandria, Va.

—Monsanto Co., St. Louis. $1,334,400. 240,000 gallons of herbicide. Defense General Supply Center, Richmond, Va.

ARMY

1—Air Logistics Corp., Pasadena, Calif. $1,291,154. Air transportable fueling systems. Pasadena. Army Mobility Equipment Center, St. Louis.

—Zeller Corp., Defiance, Ohio. $3,224,312. 20mm projectiles. Defiance. Frankford Arsenal, Philadelphia.

—REDM Corp., Wayne, N.J. $3,070,616. Wayne. Ammunition Procurement & Supply Agency, Joliet, Ill.

—Bulova Watch Co., Providence, R.I. $3,199,100. Ordnance items. Providence. Ammunition Procurement & Supply Agency, Joliet, Ill.

—Skagit Corp., Sedro Woolley, Wash. $3,144,820. Cartridge cases. Sedro Woolley. San Francisco Procurement Dist., Oakland, Calif.

—Raytheon Co., Lexington, Mass. $1,083,401. Ordnance items. Bristol, Tenn. Ammunition Procurement & Supply Agency, Joliet, Ill.

—Hupp Corp., Canton, Ohio. $2,152,307. Fuel engine assemblies for 2½ and 5-ton trucks. Canton. Army Tank Automotive Center, Warren, Mich.

—Norris Thermador Corp., Los Angeles. $2,177,750 and $2,170,146. 105mm cartridge cases. Vernon, Calif. Los Angeles Procurement Dist., Pasadena, Calif.

—Firestone Tire & Rubber Co., Akron, Ohio. $4,568,022. 106mm projectiles with fin assemblies. New Bedford, Mass. Ammunition Procurement & Supply Agency, Joliet, Ill.

—Temco, Inc., Nashville, Tenn. $3,812,487. 106mm projectiles with fin assemblies. Nashville. Ammunition Procurement & Supply Agency, Joliet, Ill.

—LTV Electrosystems, Inc., Greenville, Tex. $1,213,600. Classified Electronics equipment Greenville. Army Electronics Command, Fort Monmouth, N.J.

—Amron Corp., Waukesha, Wis. $1,687,500. Ordnance items. Waukesha. Frankford Arsenal, Philadelphia.

—Union Carbide Corp., New York City. $1,620,248 and $1,072,207. Batteries for tactical radio sets (AN/PRC-25, 8,9, and 10). New York City. Electronics Command, Philadelphia.

2—Philco Corp., Philadelphia. $1,061,000. Electronic equipment. Philadelphia. Army Electronics Command, Fort Monmouth, N.J.

—Olin Mathieson Chemical Corp., E. Alton, Ill. $1,197,000. 7.62mm ball and cartridge tracers. E. Alton. Frankford Arsenal, Philadelphia.

3—General Dynamics Corp., Pomona, Calif. $1,884,448. FY 66 R&D efforts on REDEYE. Pomona. Los Angeles Procurement Dist., Pasadena, Calif.

—Honeywell, Inc., Tampa, Fla. $3,000,000. Classified electronic equipment. Tampa. Army Electronics Command, Fort Monmouth, N.J.

4—R. E. Dailey, Detroit. $1,843,067. Work on Brookville Reservoir Project. Brookville, Ind. Detroit. Engineer Dist., Louisville, Ky.

—AKWA-Downey Construction Co., Milwaukee, Wis. $1,809,600. Furnish and install instrumentation and communication cables for launch complex 39, Phase II, at the Kennedy Space Center, Merritt Island, Fla. Engineer Dist., Merritt Island, Fla.

—Albion Malleable Iron Co., Albion, Mich. $1,333,309. Components for 2.75-inch rockets. Albion. Ammunition Procurement & Supply Agency, Joliet, Ill.

—Chamberlain Corp., Waterloo, Iowa. $2,862,720. 2.75-inch rocket components. Waterloo. Ammunition Procurement & Supply Agency, Joliet, Ill.

—Olin Mathieson Chemical Corp., New Haven, Conn. $2,276,034 and 2,846,388. Ordnance items. New Haven. Frankford Arsenal, Philadelphia.

5—Guy H. James Construction Co., Oklahoma City, Okla. $3,981,571. Work on Broken Bow Okla., Reservoir Project. Engineer Dist., Tulsa, Okla.

—Western Contracting Corp., Sioux City, Iowa. $1,797,804. Work on Calcasieu River and Pass Project. Cameron, La. Engineer Dist., New Orleans.

8 American Gyroscope Makers, Pelham Manor, N. Y. $1,161,040. Preproduction evaluation of technical and telescope mounts. Bronx, N. Y. Frankford Arsenal, Philadelphia.

— Halvorson-McLaughlin Constructors, Spokane, Wash. $13,623,000. Construction of a 550-bed hospital at the Presidio of San Francisco. Engineer District, Sacramento, Calif.

— Atwood Vacuum Machine Co., Rockford, Ill. $1,292,068 and $2,441,048. Metallic belts for 20mm cartridges. Rockford. Frankford Arsenal, Philadelphia.

— Supreme Products Corp., Chicago. $2,481,169. Ordnance items. Chicago. Frankford Arsenal, Philadelphia.

10 Firestone Tire & Rubber Co., Akron, Ohio. $1,022,190. Tires for 2½-ton trucks. Akron. Army Tank Automotive Center, Warren, Mich.

— Norris Thermador Corp., Vernon, Calif. $1,137,908. 105mm tracer projectiles. Vernon. Ammunition Procurement & Supply Agency, Joliet, Ill.

— Lockheed Shipbuilding & Construction Co., Seattle, Wash. $15,637,975. Work on Blue River Reservoir Project. Eugene, Ore. Engineer Dist., Portland, Ore.

— Airport Machining Corp., Martin, Tenn. $1,508,650. Ordnance items. Union City, Tenn. Ammunition Procurement & Supply Agency, Joliet, Ill.

— American Machinery Company of Texas, Fort Worth, Tex. $1,683,780. Ordnance items. Fort Worth, Ammunition Procurement & Supply Agency, Joliet, Ill.

Zeller Corp., Defiance, Ohio. $1,496,453. Ordnance items. Defiance. Frankford Arsenal, Philadelphia.

— Bell Helicopter Co., Hurst, Tex. $9,838,208. UH-1 helicopter production facilities. Hurst. Army Aviation Command, St. Louis.

12 Williamson Co., Madison, Ind. $1,192,120. Modifications to aircraft engine shipping containers. Madison. Edgewood Arsenal, Md.

— Norris Thermador Corp., Los Angeles, $1,089,307. Ordnance items. Vernon, Calif. Los Angeles Procurement Dist., Pasadena, Calif.

— TRW, Inc., Redondo Beach, Calif. 5,500,000. Design, development and fabrication of test vehicles, and to conduct a flight test program over an instrumental range. Redondo Beach. Army Missile Command, Huntsville, Ala.

— Lehigh, Inc., Easton, Pa. $1,833,091. Ordnance items. Easton. Ammunition Procurement & Supply Agency, Joliet, Ill.

— Boeing Co., Morton, Pa. $1,100,000. Modification of CH-47A helicopters to an armed and armored configuration. Morton. Army Aviation Command, St. Louis.

15 Sylvania Electric Products, Mountain View, Calif. $2,940,000. Research and development in electronic warfare. Mountain View. Army Electronics Command, Fort Monmouth, N. J.

— R. M. Wells Co., Quanah, Tex. $2,998,100. Construction of a composite medical facility at Cannon AFB, N.M. Engineer Dist., Albuquerque, N. M.

— Norris Thermador Corp., Los Angeles. $2,295,878. Ordnance items. Vernon, Calif. Ammunition Procurement & Supply Agency, Joliet, Ill.

— Martin-Marietta, Orlando, Fla. $4,750,000. Production on the Pershing missile system for FY 1966. Orlando. Army Missile Command, Huntsville, Ala.

— Remington Arms, Inc., Bridgeport, Conn. $1,171,832. Ordnance items. Bridgeport. Frankford Arsenal, Philadelphia.

— Olin Mathieson Chemical Corp., E. Alton, Ill. $1,925,454. Ordnance items. E. Alton. Frankford Arsenal, Philadelphia.

16 Ryan Aeronautical Co., San Diego, Calif. $1,326,000. Flight testing of the XV-5A aircraft; incorporating various research modifications; overhauling certain aircraft components and training government personnel. Edwards AFB, Calif. and San Diego. Army Aviation Materiel Laboratories, Fort Eustis, Va.

17 Raytheon Co., Lexington, Mass. $1,390,904. Ground support equipment for the HAWK missile system. Waltham and Andover, Mass. Army Missile Command, Huntsville, Ala.

18 I. D. Precision Components, Corp., Jamaica, N. Y. $1,766,014. Ordnance items. Gadsden, Ala. and Jamaica. Ammunition Procurement & Supply Agency, Joliet, Ill.

— Olin Mathieson Chemical Corp., E. Alton, Ill. $1,949,947. Ordnance items. E. Alton. Edgewood Arsenal, Md.

19 Mason & Hanger, Silas Mason Co., Lexington, Ky. $3,464,460. Ordnance items. Burlington, Iowa. Ammunition Procurement & Supply Agency, Joliet, Ill.

— Harvey Aluminum Sales, Torrance, Calif. $12,856,038. Ammunition. Milan, Tenn. Ammunition Procurement & Supply Agency, Joliet, Ill.

— Olin Mathieson Chemical Corp., New York City. Ordnance items. Charlestown, Ind. Ammunition Procurement & Supply Agency, Joliet, Ill.

— Chamberlain Corp., Scranton, Pa. $2,553,569. Ordnance items. Scranton. Ammunition Procurement & Supply Agency, Joliet, Ill.

— Newport News Shipbuilding & Dry Dock Co., Newport News, Va. $1,417,800. Design, manufacture & delivery of 2 turbines for the West Point Dam Project. Design & manufacture will be done at Newport News. Delivery will be made to West Point, Ga. Engineer District, Savannah, Ga.

— Firestone Tire & Rubber Co., Akron, Ohio. Rubber track shoe assemblies for M-60 tanks. Noblesville, Ind. Army Tank Automotive Center, Warren, Mich.

— Canadian Commercial Corp., Ottawa, Ontario, Canada. $1,858,066. Ordnance. West Ingersoll, Ontario. Ammunition Procurement and Supply Agency, Joliet, Ill.

— General Electric, Burlington, Vt. $1,808,000. M5 sub-systems & repair parts. Burlington. Army Weapons Command, Rock Island, Ill.

— General Electric, Burlington, Vt. $8,052,250. (Air Force funds) 20mm guns and gun pods. Burlington. Army Weapons Command, Rock Island, Ill.

— Sylvania Electric Products, Inc., Emporium, Pa. $3,715,425. Electron tubes. Emporium. Harry Diamond Laboratories, Washington, D. C.

— Raytheon Co., Missile Systems Div., Bristol, Tenn. $7,461,078. Mortar fuzes. Bristol. Harry Diamond Laboratories, Washington, D. C.

— Motorola, Chicago. $7,515,677. Mortar fuzes. Chicago. Harry Diamond Laboratories, Washington, D. C.

22 AVCO Corp., Everett, Mass. $1,067,878. A research program under (an Advanced Research Projects Agency program) Project DEFENDER. Everett. Army Missile Command, Huntsville, Ala.

— General Dynamics, Pomona, Calif. $8,006,310. FY 1966 engineering services for the REDEYE missile system. Pomona. Los Angeles Procurement Dist. Pasadena, Calif.

— Bauer Dredging Co., Port Lavaca, Tex. $1,104,134. Ship channel project at Houston, Tex. Engineer Dist., Galveston, Tex.

— William McWilliams Industries, New Orleans, La. $2,380,000. Work on the Ouachita and Black Rivers Projects. Jonesville, La. Engineer Dist., Vicksburg, La.

— Newall, Inc., Waltham, Mass. $1,104,640. Ordnance items. Waltham. Frankford Arsenal, Philadelphia.

23 Philco Corp., Newport Beach, Calif. $1,200,000. Industrial engineering services for the SHILLELAGH missile. Newport Beach. Los Angeles Procurement Dist., Pasadena, Calif.

24 Bell Aerospace Corp., Hydraulic Research Mfg. Co., Burbank, Calif. $1,745,048. Cylinder assemblies for tail rotors for UH-1 aircraft. Burbank. Army Aviation Command, St. Louis.

— Varo, Inc., Garland, Tex. $1,461,050. Periscopes & preproduction evaluation of technical data. Garland. Frankford Arsenal, Philadelphia.

— Servidone Construction Corp., Castleton, N. Y. $1,186,615. Work on the Hop Brook Reservoir Project, Waterbury, Conn. Army Engineer Div., New England, Waltham, Mass.

26 Hughes Aircraft, Culver City, Calif. $12,674,886. Research & development on the TOW missile system. Tucson, Ariz.; El Segundo, Calif.; Culver City. Army Missile Command, Redstone Arsenal, Ala.

— Algernon Blair, Inc., Montgomery, Ala. $2,644,183. Construction of a training classroom complex at Fort Jackson, S. C. Engineer Dist., Savannah, Ga.

— Cayuga Construction Corp., New York City. $3,519,625. Work on the Chesapeake & Delaware Canal Project. Wilmington, Del. Engineer Dist., Philadelphia.

— Hardaway Contracting Co., Columbus, Ga., and Sam Finley, Inc., Atlanta, Ga. $15,587,205. Work on lock and dam No. 8 of the Arkansas River and Tributaries Project. Faulkner & Perry Counties, Ark. Engineer Dist., Little Rock, Ark.

— Martin-Marietta Corp., Orlando, Fla. $1,422,203. Special support equipment, spare parts and data to support radio transmitter sets. Orlando. Army Missile Command, Redstone Arsenal, Ala.

— Industrial Builders, Inc., Fargo, N. D. $1,149,864. Work on Gering Valley Project, Gering, Neb. Engineer Dist., Omaha, Neb.

29 Belock Instrument Corp., College Point, N. Y. $1,345,408. Depot maintenance equipment for the HAWK missile. College Point. Army Missile Command, Huntsville, Ala.

— General Motors, Pontiac, Mich. $5,584,068. 483 school/ambulance conversion buses. Pontiac and Kosciusko, Miss. Army Tank Automotive Center, Warren, Mich.

— Markwell & Hartz, Memphis, Tenn., $1,391,108. Work on Carr Fork Reservoir Project. Hazard, Ky. Engineer Dist., Louisville, Ky.

— Pace Corp., Memphis, Tenn. $1,206,728. Ordnance items. Memphis. Ammunition Procurement & Supply Agency, Joliet, Ill.

— Garrett Corp., AiResearch Mfg. Co. div., Phoenix, Ariz. $1,443,700. Research & development on Project MUST—a self-contained transportable medical unit. Los Angeles and Phoenix. Army Medical Research & Development Command, Office of the Surgeon General, Washington, D. C.

— Chamberlain Corp., Waterloo, Iowa. $1,303,185. Ordnance items. Waterloo. Ammunition Procurement & Supply Agency, Joliet, Ill.

30 Sperry Rand Corp., New York City. $6,006,089. Ordnance items. Shreveport, La. Ammunition Procurement & Supply Agency, Joliet, Ill.

— Day & Zimmerman, Inc., Philadelphia. $22,486,212. Ordnance items. Texarkana, Tex. Ammunition Procurement & Supply Agency, Joliet, Ill.

— Remington Arms Co., Bridgeport, Conn. $9,161,428. Loading, assembling and packing of miscellaneous small arms ammunition. Independence, Mo. Ammunition Procurement & Supply Agency, Joliet, Ill.

— Western Electric Co., New York City. $7,110,378. FY 1966 engineering services for NIKE HERCULES and improved NIKE HERCULES. Burlington, N. C., Charlotte, N. C. and Syracuse, N. Y. Army Missile Command, Redstone Arsenal, Ala.

— Hercules Powder Co., Wilmington, Del. $17,241,177. Propellants. Radford, Va. Ammunition Procurement and Supply Agency, Joliet, Ill.

— U. S. Rubber Co., New York City. $13,364,503. TNT and Tetryl, and for reactivation and support of Joliet Army Ammunition Plant, Ill. Ammunition Procurement & Supply Agency, Joliet, Ill.

— American Dredging Co., Philadelphia. $3,444,782. Work on Inland Waterway-Delaware River to Chesapeake Bay Project, Engineer Dist., Philadelphia.

— Menominee Engineering Corp., Norway, Mich. $8,785,134 and $3,785,046. Components for the M-4 military floating bridge. Norway. Army Mobility Center, St. Louis.

— Universal Match Corp., Phoenix, Ariz. $1,038,440. Ordnance items. Phoenix. Ammunition Procurement & Supply Agency, Joliet, Ill.

— Olin Mathieson Chemical Corp., E. Alton, Ill. $3,114,475. Ordnance items. E. Alton. Ammunition Procurement & Supply Agency, Joliet, Ill.

—Bell & Howell Co., Chicago. $2,127,130. Ordnance items. Chicago. Ammunition Procurement & Supply Agency, Joliet, Ill.

—Telecomputing Services, Inc., Panorama City, Calif. $1,104,852. Data reductions services including development of data reduction of techniques, data analysis, data conversion, and digital data processing. White Sands Missile Range, N. M. White Sands Missile Range, N. M.

—Security Construction Co., Richmond, Va. $3,384,000. Conversion of a barrack building to a Bachelor Officer Quarters with mess hall. Fort Benning, Ga. Engineer Dist., Savannah, Ga.

NAVY

1—Sperry Rand Corp., Sperry Farragut Co., Bristol, Tenn. $5,710,425. SHRIKE missiles for the Navy and Air Force. Bristol. Bureau of Naval Weapons.

—George Hyman Construction Co., Washington, D. C. $2,914,998. Construction of a 1500-man dormitory at Bolling AFB, Washington, D. C. Director, Chesapeake Div., Bureau of Yards and Docks.

—Kaiser Aerospace & Electronics Corp., Palo Alto, Calif. $1,845,000. Spare parts for aircraft display systems. Palo Alto. Navy Aviation Supply Office, Philadelphia.

—Wright Aeronautical Division of Curtiss Wright Corp., Wood-Ridge, N. J. $1,147,893. Aircraft engine spare parts. Wood-Ridge. Navy Aviation Supply Office, Philadelphia.

2—LTV Aerospace Corp., Ling-Temco-Vought, Inc., Dallas, Tex. $95,675,143. A-7A Corsair II aircraft and equipment. Dallas. Bureau of Naval Weapons.

—McDonnell Aircraft, St. Louis. $198,600,000. Production of F-4 aircraft for the Navy and Air Force. St. Louis. Bureau of Naval Weapons.

—Harmony Tower Development Co., Scottsdale, Ariz. $1,757,500. Construction of an aircraft systems training building and enlisted men's barracks at NAS Whidbey Island, Wash. Director, Northwest Div., Bureau of Yards and Docks.

3—United Aircraft, Pratt & Whitney Div., E. Hartford, Conn. $5,353,290. TF-30 engines. E. Hartford. Bureau of Naval Weapons.

—Daniel J. Keating, Philadelphia. $2,039,000. Crane tracks drydocks at Naval Shipyard, Philadelphia. Dir., E. Central Div., Bureau of Yards and Docks.

—International Telephone & Telegraph Corp., Nutley, N. J. $2,425,214. TACAN (Tactical Air Navigation) sets for A-7A and CH-46A aircraft. Camden, N. J. Navy Purchasing Office.

—Raytheon Co., Sudbury, Mass. $2,222,000. POLARIS guidance assemblies. Waltham, Mass. Special Projects Office.

4—Harvell Kilgore Corp., Toone, Tenn. $4,368,100. Parachute flares. Toone. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—Amcel Propulsion Co., Celanese Corp. of America, Asheville, N. C. $6,191,197. Parachute flares. Asheville. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—Bendix Corp., Mishawaka, Ind. $37,027,262. Guidance control, air frame and ancillary test sets used with TALOS surface-to-air missile system. Mishawaka. Navy Purchasing Office.

—Bermite Powder Co., Saugus, Calif. $10,886,057. Parachute flares. Saugus. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—Curtiss Wright Corp., Wood-Ridge, N. J. $1,465,068. Aircraft engine spare parts. Wood-Ridge. Navy Aviation Supply Office, Philadelphia.

—United Aircraft, Stratford, Conn. $1,874,600. Spare parts for the CH-53A helicopter. Stratford. Navy Aviation Supply Office

—American Mfg. Company of Texas, Fort Worth, Tex. $2,896,200. Improvements to production line facilities. Fort Worth. Bureau of Naval Weapons.

—Sperry Piedmont Co., Sperry-Rand Corp., Charlottesville, Va. $1,360,525. Classified Electronic equipment. Charlottesvile. Bureau of Naval Weapons.

5—Guidance Technology, Inc., Santa Monica, Calif. $1,357,081. Components for an attitude indicating system used in aircraft as a safety device. Santa Monica. Navy Purchasing Office, Washington, D. C.

—Mars Constructors, Inc., Honolulu, Hawaii. $1,207,100. Construction of a bachelor officers quarters with mess at the Pearl Harbor Naval Station. Bureau of Yards and Docks.

8—United Aircraft, Pratt & Whitney Div., E. Hartford, Conn. $10,000,000. Development testing of the JTF10A-9 aircraft engine. $3,000,000. Design of the lightweight JTF10A-27 aircraft engine. E. Hartford. Bureau of Naval Weapons.

9—Collins Radio Co., Cedar Rapids, Iowa. $2,277,500. Radio sets for use in support of the Army aircraft program. Cedar Rapids. Navy Purchasing Office, Washington, D. C.
$2,684,000. SNAKEYE bomb bodies. Fort

—American Mfg. Co., Fort Worth, Tex. Worth. Navy Ship's Parts Control Center, Mechanicsburg, Pa.

—North American Aviation, Columbus, Ohio. $1,230,760. RA-5C Vigilante airframe components. Columbus. Navy Aviation Supply Office, Philadelphia.

—Johns Hopkins University, Applied Physics Lab, Silver Spring, Md. $21,286,000. Continued research and development on guided missile systems. Silver Spring. Bureau of Naval Weapons.

10—U. S. Steel Corp., Pittsburgh, Pa. $2,305,000. Acquisition & installation of production equipment at McKeesport, Pa. Bureau of Naval Weapons.

12—United Aircraft, Pratt & Whitney Div., E. Hartford, Conn. $4,415,067. Spare parts used in support of the A-7A (CORSAIR II) aircraft engine. E. Hartford. Navy Aviation Supply Office, Philadelphia.

—Curtiss Wright Corp., Wood-Ridge, N. J. $3,413,207. Aircraft engine spare parts. Wood-Ridge. Navy Aviation Supply Office, Philadelphia.

—Motorola, Inc., Scottsdale, Ariz. $1,652,961. Radar beacon sets for A-7A and VAL aircraft. Scottsdale. Navy Purchasing Office, Washington, D. C.

—E. W. Bliss Co., Portland, Maine. $1,361,637. M-21 arresting gear systems to be used with the Marine Corps SATS systems. Portland. Marine Corps.

—Mite Corp., New Haven, Conn. $5,391,590. Teletypewriter sets. New Haven. Marine Corps.

15—University of California at Berkeley. $1,416,000. Research into the basic factors involved in devising and improving methods of defense against potential biological warfare agent. Berkeley. Office of Naval Research.

—Technical Material Corp., Mamaroneck, N. Y. $1,888,462. Radio receivers. Mamaroneck. Navy Purchasing Office, Wash., D. C.

—Waukesha Motor Co., Waukesha, Wis. $1,176,481. Non-magnetic diesel engines for naval ships. Waukesha. Bureau of Ships.

—General Electric, Utica, N. Y. $1,626,200. Radar equipment on E-2A Hawkeye aircraft. Utica. Naval Aviation Supply Office, Philadelphia.

—United Aircraft, Hamilton Standard Div., Windsor Locks, Conn. $5,976,573. Propeller systems for P-3A aircraft. Windsor Locks. Bureau of Naval Weapons.

—United Aircraft, Pratt & Whitney Div., E. Hartford, Conn. $86,150,200. TF-30-P-3 engines for the Air Force. E. Hartford. Bureau of Naval weapons.

—Baltimore Contractors, Inc., Baltimore, Md. $1,574,000. Construction of foundations & utilities relocation of the science building at the Naval Academy, Annapolis, Md. Dir., Chesapeake Div., Bureau of Yards and Docks.

16—Western Electric Co., New York City. $6,195,200. Oceanographic research. New York City. Navy Purchasing Office, Wash., D. C.

—Bendix Corp., Eclipse Pioneer Div., Teterboro, N. J. $8,707,700. Flight control system components. N. Hollywood. Calif. and Teterboro. Navy Aviation Supply Office, Philadelphia.

—Norris Thermador Corp., Los Angeles. $17,061,000. Bomb bodies. Los Angeles. Navy Ship's Parts Control Center, Mechanicsburg, Pa.

—Borg Warner Corp., Ingersoll Products Div., Chicago. $8,372,160. Bomb bodies. Chicago. Navy Ship's Parts Control Center, Mechanicsburg, Pa.

—General Electric, Cincinnati, Ohio. $2,326,679. Spare parts for J-79 jet engines. Cincinnati. Navy Aviation Supply Office, Philadelphia.

—United Aircraft, Sikorsky Aircraft Div., Stratford, Conn. $4,590,620. $3,417,573. Spare parts for initial outfitting of CH-53A helicopters. Stratford. Navy Aviation Supply Office, Philadelphia.

17—Willamette Iron & Steel Co., Portland, Ore. $3,421,000. Activation and overhaul of tank landing ships LITCHFIELD COUNTY (LST-901), PARK COUNTY (LST-1077) and SUTTER COUNTY (LST-1150) located at the Bremerton, Wash., Reserve Fleet Area. Industrial Manager, 13th Naval District.

—Victor Beauchamp Associated, Wash., D. C. $3,027,119. $4,719,000. Construction of an operations and technical services building and a general purpose laboratory at the Naval Research Laboratory, Wash., D. C. Dir., Chesapeake Div., Bureau of Yards and Docks.

—Norris Thermador Corp., Los Angeles. $5,674,370. Facilities and support of production of ordnance items. Los Angeles. Bureau of Naval Weapons.

—Kaman Aircraft, Bloomfield, Conn. $2,778,000. Modification of UH-2 SEASPRITE helicopters to a twin engine configuration. Bloomfield. Bureau of Naval Weapons.

—United Aircraft, Hamilton Standard Div., Windsor Locks, Conn. $1,704,933. Aircraft propellers and related components for the Air Force. Windsor Locks. Bureau of Naval Weapons.

18—Sperry Rand Corp., Univac Div., St. Paul, Minn. $1,533,554. Computer equipment & services associated with the Navy Tactical Data System. St. Paul. Bureau of Ships.

—Ets-Hokin Corp., Cemsco Div., Wilmington, Calif. $1,190,606. Main switch gears and switchboards for shipboard services. Wilmington. Bureau of Ships.

—International Telephone & Telegraph Corp., Federal Labs, Nutley, N. J. $1,994,723. Repair parts for radio navigation equipment. Nutley. Bureau of Ships.

—United Aircraft, Pratt & Whitney Div., E. Hartford, Conn. $2,846,151. J60-P-6 engines for T-2B BUCKEYE aircraft. E. Hartford. Bureau of Naval Weapons.

19—Newport News Shipbuilding & Dry Dock Co., Newport News, Va., $3,000,000. Alteration, refueling, submarine safety certification provisions & missile navigation changes for the fleet ballistic submarine USS ETHAN ALLEN (SSBN-608). Newport News. Bureau of Ships.

—Auto-Control Laboratories, Los Angeles. $1,126,244. Hydraulic components of test stands used for test of aircraft components. Los Angeles. Navy Purchasing Office, Wash., D. C.

22—Columbia University, New York City. $1,760,000. Research in connection with Project ARTEMIS. New York City. Office of Naval Research.

23—Willamette Iron & Steel Co., Richmond, Calif. $1,447,000. Activation and repair of the landing craft repair ship USS ASKARI (ARL-30). Richmond. Industrial Manager, 12th Naval District.

—General Precision, Inc., Librascope Group, Glendale, Calif. $8,794,484. Components for the fire control system for SUBROC. Glendale. Bureau of Naval Weapons.

—North American Aviation, Columbus, Ohio. $1,690,810. Classified electronic equipment. Columbus. Bureau of Naval Weapons.

24—Kollmorgen Corp., Northampton, Mass. $1,116,024. Submarine periscopes & associated equipment. Northampton. Bureau of Ships.

—Radio Receptor Div. of General Instrument Corp., Hicksville, N. Y. $2,576,800. Classified electronics equipment. Hicksville. Bureau of Ships.

—U.S. Steel Corp., Pittsburgh, Pa. $18,097,000. Bomb bodies. McKeesport, Pa. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—Northwest Marine Iron Works, Portland, Ore. $3,396,579. Activation and overhaul of gasoline tankers USS PATAPSCO (AOO-1) and USS KISHWAUKEE (AOG-9). Portland. Industrial Manager, 18th Naval District.

29—**Sewart Seacraft, Inc.**, Berwick, La. $6,477,950. 50 twin-screw, aluminum patrol launches. Berwick. Bureau of Ships.

—**United Boatbuilders**, Bellingham, Wash. $3,916,680. 120 plastic river-patrol boats. Bellingham. Bureau of Ships.

30—**Loadcraft, Inc.**, Denton, Tex. $2,354,608. Fire fighting trucks. Brady, Tex. Navy Purchasing Office, Washington, D. C.

—**Honeywell, Inc.**, Minneapolis, Minn. $2,509,126. POLARIS guidance equipment. Minneapolis. Special Projects Office.

—**U. S. Steel Corp.**, Pittsburgh, Pa. $1,945,000. Bomb bodies. Pittsburgh. Bureau of Naval Weapons.

AIR FORCE

1—**Bell Aerospace Corp.**, Fort Worth, Tex. $2,400,000. Production of UH-1F helicopters & related equipment. Fort Worth. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**International Telephone & Telegraph**, Nutley, N. J. $6,439,907. Electronic countermeasure equipment. Nutley. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Mass.

—**Lockheed Aircraft**, Sunnyvale, Calif. $1,288,275. Work on GEMINI program. Sunnydale. Space Systems Div. (AFSC), Los Angeles, Calif.

3—**Stewart Warner Corp.**, Chicago. $1,598,272. Production of radar altimeters for F-4 aircraft. Chicago. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**General Electric Co.**, Cincinnati, Ohio. $1,794,892. Jettison assemblies for fighter aircraft fuel tanks. Cincinnati. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

4—**Ion Physics Corp.**, Burlington, Mass. $1,003,169. Development of advanced flash X-ray equipment. Burlington. Air Force Special Weapons Center (AFSC), Kirtland AFB, N. M.

5—**Libby Welding Co.**, Kansas City, Mo. $1,006,086. 127 75KVA gas turbine generator sets. Kansas City. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—**AiResearch Mfg. Co.**, Phoenix, Ariz. $3,016,827. Gas turbine engines. Phoenix. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—**American Electric**, Paramount, Calif. $1,316,424. Production of aircraft ordnance. Long Beach, Calif. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**Armco Steel Corp.**, Middletown, Ohio. $1,053,200. Production of metal retaining walls. Middleton. 2750th Air Base Wing, Wright-Patterson AFB, Ohio.

—**General American Transportation Corp.**, Niles, Ill. $3,320,000. Production of aircraft speed brake components. Niles. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

8—**General Electric**, Cincinnati, Ohio. $78,900,000. Production of fan jet engines for the C-5A heavy transport aircraft. Cincinnati. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Panel Corporation of America**, Denver, Colo. $1,145,754. Production of aerial target vehicles for pilot training. Denver. Ogden Air Materiel Area (FLC), Hill AFB, Utah.

—**Talley Industries**, Mesa, Ariz. $1,547,800. Production of aircraft engine starter cartridges. Mesa. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**Lockheed Aircraft**, Sunnyvale, Calif. $1,350,000. Classified services. Sunnyvale. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

9—**General Electric**, Johnson City, N. Y. $5,070,000. Optical sights for F-4 aircraft. Johnson City. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Lockley Machine Co.**, New Castle, Pa. $1,492,401. Production of practice bombs. New Castle. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

—**Goodyear Tire & Rubber Co.**, Akron, Ohio. $1,308,384. Wheel and brake assemblies for C-141 aircraft. Akron. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Continental Aviation & Engineering Corp.**, Detroit. $2,377,835. Classified work. Detroit. Aeronautical Systems Div. (AFSC). Wright-Patterson AFB, Ohio.

10—**Honeywell, Inc.**, Hopkins, Minn. $3,400,000. Ordnance items. Hopkins. Aeronautical System Div. (AFSC), Wright-Patterson AFB, Ohio.

—**F. D. Rich Co.**, Stamford, Conn. $4,912,330. Construction of 337 housing units at Beale AFB, Yuba City, Calif. Procurement Office (SAC), Beale AFB, Calif.

—**Lockheed Aircraft**, Marietta, Ga. $22,600,000. Production of C-141 aircraft. Marietta. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

12—**Stelma, Inc.**, Stamford, Conn. $1,720,325. Technical services in support of command-communications systems. Stamford. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Mass.

—**Collins Radio Co.**, Cedar Rapids, Iowa. $1,975,522. Production of components for communications sets. Cedar Rapids. Warner Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—**Aircraft Armaments, Inc.**, Cockeysville, Md. $5,721,758. Electronic countermeasures simulator groups. Cockeysville. Rome Air Development Center (AFSC), Griffiss AFB, N. Y.

—**AVCO Corp.**, Stratford, Conn. $1,429,336. MARK 11-A re-entry vehicles. Stratford. Ballistic Systems Div. (AFSC), Norton AFB. Calif.

15—**Boeing Co.**, Seattle, Wash. $1,368,000 and $1,002,000. Modification of early MINUTEMAN missiles. Rapid City, S. D. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Garrett Corp.**, Phoenix, Ariz. $1,473,086. Production of auxiliary gas turbine generators for C-141 aircraft. Phoenix. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Boeing Co.**, Benton City, Wash. $1,349,763. Studies applicable to advanced manned strategic aircraft. Benton City. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

16—**General Precision, Inc.**, San Marcos, Calif. $7,990,210. Navigational Systems for C-141 aircraft. San Marcos. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Hewlett-Packard Co.**, Palo Alto, Calif. $1,424,072. Electronic test sets. Palo Alto. Middletown Air Materiel Area (AFLC), Olmstead AFB, Pa.

—**Lear Siegler, Inc.**, Santa Monica, Calif. $2,470,00. Flight control components for the FIREBEE target missile. Santa Monica. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Olin Mathieson Chemical Co.**, E. Alton, Ill. $1,500,000. Cartridge starters for aircraft engines. Marion, Ohio. Aeronautical Systems Div. (AFSC). Wright-Patterson AFB, Ohio.

18—**General Electric**, Cincinnati, Ohio. $1,342,500. Engineering services for J79-GE-11A engines. Cincinnati. Aeronautical Systems Div. (AFSC). Wright-Patterson AFB, Ohio.

—**D-Velco Mfg. Co.**, Phoenix, Ariz. $4,778,465. Cooler systems, aerospace ground equipment and spare parts for F-101, F-102 and F-106 aircraft. Phoenix. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

19—**Fairchild-Hiller Corp.**, Hagerstown, Md. $1,298,262. Production of spare parts for F-105 aircraft. Hagerstown, Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—**AVCO Corp.**, Stratford, Conn. $1,400,00. Special tooling for production of engines for UH-1 Army helicopters. Stratford. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**General Electric Co.**, Philadelphia. $1,192,894. Development & test of space vehicles. Philadelphia. Space Systems Div. (AFSC), Los Angeles.

—**Physics International Co.**, San Leandro, Calif. $1,489,330. Development of an advanced flash x-ray system. San Leandro. AF Special Weapons Center (AFSC), Kirtland AFB, N. M.

—**Atlantic Research Corp.**, Alexandria, Va. $3,042,000. High altitude weather sounding rockets. Gainesville, Va. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**Douglas Aircraft**, Long Beach, Calif. $1,279,395. Ordnance ejector racks for F-105 aircraft. Torrance, Calif. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—**Boeing Co.**, Seattle, Wash. $20,175,375. Assembly, installation & checkout of MINUTEMAN missiles for the Grand Forks AFB, N. D. complex. Seattle. Ballistic Systems Div. (AFSC), Norton AFB Calif.

—**Raytheon Co.**, Lexington, Mass. $8,600,000. Air Force Weapons Effectiveness Testing Instrument System. Lexington. Air Proving Ground Center (AFSC), Eglin AFB, Fla.

22—**North American Aviation**, Anaheim, Calif. $2,528,533. Overhaul and repair of components for the HOUND DOG missile. Anaheim. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

23—**Sundstrand Corp.**, Rockford, Ill. $2,516,431. Electric generator alternators for C-141 aircraft. Rockford. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

24—**Sperry Gyroscope Co.**, Great Neck, N. Y. $1,150,000. Flight test program for electronic countermeasure equipment. Great Neck, Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Lockheed Missiles & Space Co.**, Sunnyvale Calif. $6,500,000. AGENA-D launch services. Sunnyvale. Space Systems Div. (AFSC), Los Angeles.

—**Sperry Rand Corp.**, Phoenix, Ariz. $1,523,085. Production of components for gyroscope compass systems. Phoenix. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**R.P.R. Construction Co., and Harry M. Rubenstein (joint venture)**, Phoenix, Ariz. $4,538,350. Construction of 287 family housing units at Offutt AFB, Neb. Procurement Office, Offutt AFB, Neb.

—**FWD Corp.**, Clintonville, Wis. $3,846,700. Production of 42 fire fighting trucks. Clintonville. Warner Robins Air Materiel Area (AFLC), Robins AFB, Ga.

26—**Applied Technology, Inc.**, Palo Alto, Calif. $6,680,310. Production of aircraft electronic equipment. Palo Alto. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—**General Electric**, Cincinnati, Ohio. $1,047,227. Research & Development on an advanced turbine engine gas generator program. Cincinnati. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Republic Aviation**, Farmingdale, N. Y. $1,140,706. Modification of F-105 aircraft. Farmingdale. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

29—**AVCO Corp.**, Richmond, Ind. $3,600,000. Fuzes & related equipment for aircraft ordnance. Richmond. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Northrop Corp., Norair Div.**, Hawthorne, Calif. $1,774,365. Installation, operation and maintenance of a BOMARC missile training facility at Vandenberg AFB, Calif. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**North American Aviation**, Los Angeles. $1,455,711. Studies applicable to an advanced manned strategic aircraft. Los Angeles. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

30—**Boeing Co.**, Wichita, Kan. $1,464,140. Production of components for minor modification of B-52 aircraft. Wichita. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—**Pioneer Parachute Co.**, Manchester, Conn. $1,760,364. Production of parachutes. Manchester. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

—**Philco Corp.**, Palo Alto, Calif. $2,625,000. Work on satellite control network. Palo Alto. Space Systems Div. (AFSC), Los Angeles.

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SEALAB II Report Will Be Feature of Navy's "Man-in-the-Sea" Symposium

"Man's Extension into the Sea" is the theme of a two-day symposium sponsored by the U.S. Navy and six professional societies to be held in Washington, D.C., Jan. 11–12.

The meeting is being conducted in response to an increasing demand for exchange of information on progress by both Government and industry to put man into the sea for longer periods at greater depths.

Secretary of the Navy Paul H. Nitze will lead off the program with the keynote address. Feature papers will be presented by members of the SEALAB II program, including astronaut-aquanaut, Commander Scott Carpenter, Captain George Bond and Captain Walter Mazzone. Inventor-scientist Ed Link will speak on flexible structures for underwater living.

The Navy's SEALAB II experiment began Aug. 27 at an underwater site off the coast of southern California. During a 45-day period three groups of 10 men lived and worked for 15 days each at a depth of 205 feet in a 57-foot long undersea habitat. The aquanaut teams were made up of both Navy divers and civilian scientists. SEALAB II was the second phase of the Navy's "Man-in-the-Sea" program being conducted by the Special Projects Office.

The January symposium will cover many details of SEALAB II such as aquanaut experiences, engineering problems, medical problems, training, logistics, communications, photography, scientific experiments and instrumentation.

Societies sponsoring the symposium are: American Institute of Aeronautics and Astronautics; American Society of Mechanical Engineers; American Society of Naval Engineers; Marine Technology Society; Society of Naval Architects and Marine Engineers; and American Geophysical Union. Navy sponsors are the Office of Naval Research and the Special Projects Office.

Registration fee for the symposium is six dollars, which includes admittance to all sessions and a bound copy of the proceedings. For complete information on advance registration write or call: Ted Evans, the Conference Management Organization, Inc., Colonial Bldg., 105 N. Virginia Ave., Falls Church, Va. 22046. Phone: (Area Code 703) 533-2133.

New AF Mobile Labs Will Speed Photo Processing

A new "semi-dry" processing method which speeds up the development of aerial reconnaissance film has been perfected by the Air Force.

The speedy system will be used in the Air Force's new four-wheeled mobile photographic laboratory units which will probably be in use in Southeast Asia next spring.

The new mobile labs will be capable of processing film enroute from an aircraft to photo interpretation officers, thus speeding up tactical reconnaissance operations.

In the semi-dry process, all developing and fixing chemicals are included in a thin emulsion on a roll of film. When the special film, known as Bimat, is brought face to face with exposed film, complete automatic development takes place in five to 15 minutes.

Use of the system cuts developing time and eliminates the elaborate conventional requirements for water, electricity and chemical waste disposal. In addition, its simplified process does not require the service of skilled photo technicians.

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